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SMITHSONIAN DEPOSIT

THE IRON AGE

A Review of the Hardware, Iron, Machiner rades.

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Smithsonian Institute Washington D C

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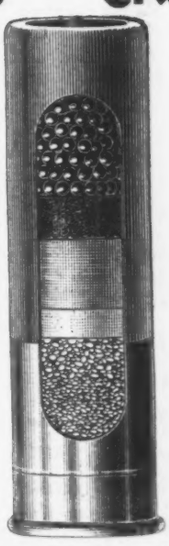

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CAHALL BOILERS See Page 82.

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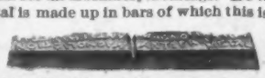
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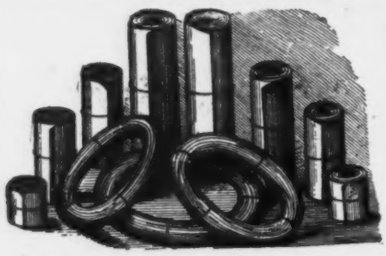

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88 30-in. drop, 2 15-16 in. shaft, list..... $25.50
18 20 in. " 2 15-16 in. " " 21.20
10 18-in. " 2 15-16 in. " " 20.15
2 30-in. " 2 7-16 in. " " 18.60

No. 3—Same as above only single brace.
54 20-in. drop, 2 15-16 in. shaft, list..... 20 40
6 14-in. " 2 3-16 in. " " 11.40
1 12-in. " 2 3-16 in. " " 10.90

No. 3—Similar to above only wick oilers.
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21 20-in. drop, 2 7-16 in. " " 14.00

No. 4—Plain Cast Iron Box, not self-oiling.
25 16-in drop, 2 3-16 in. shaft, list..... 12.00

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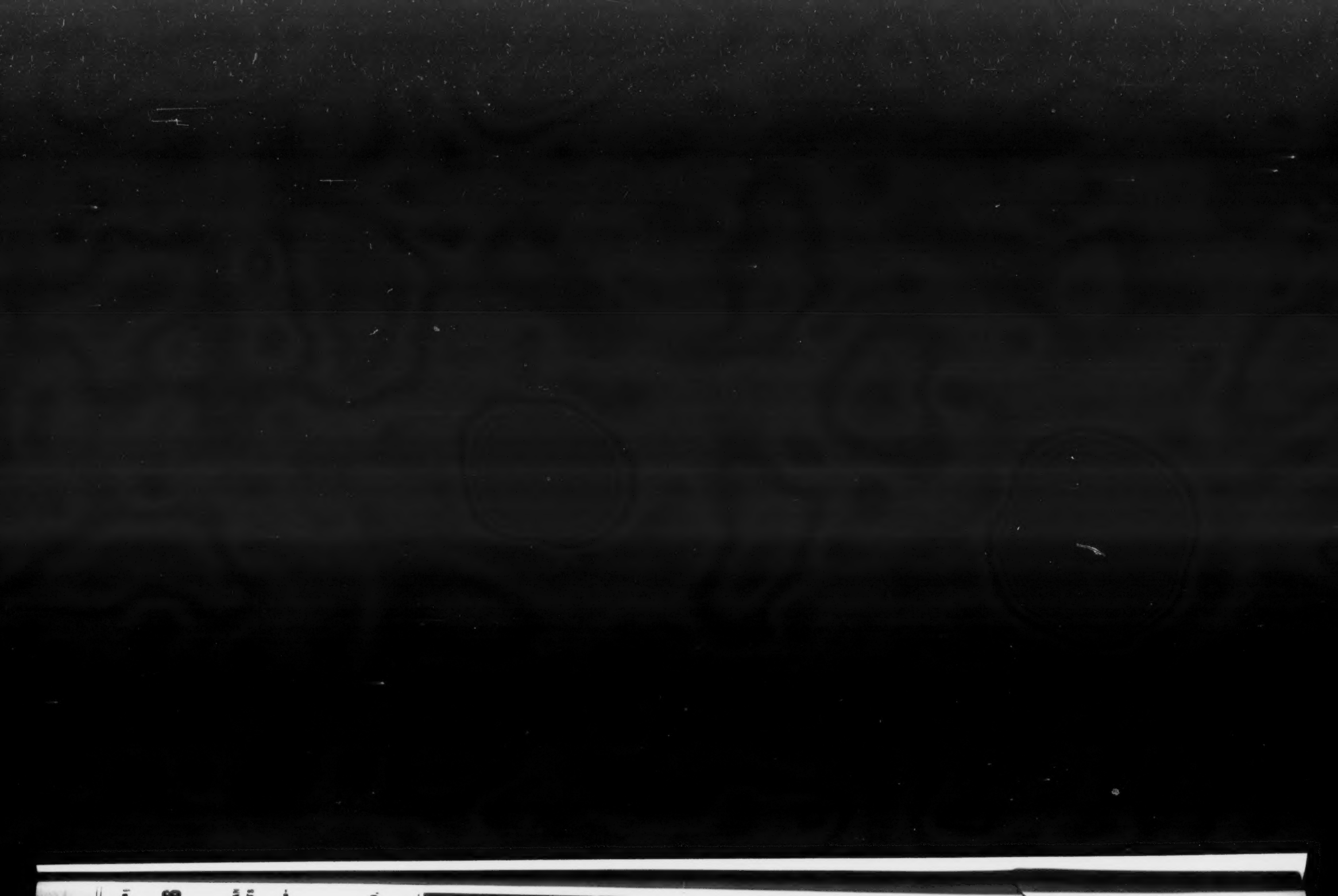


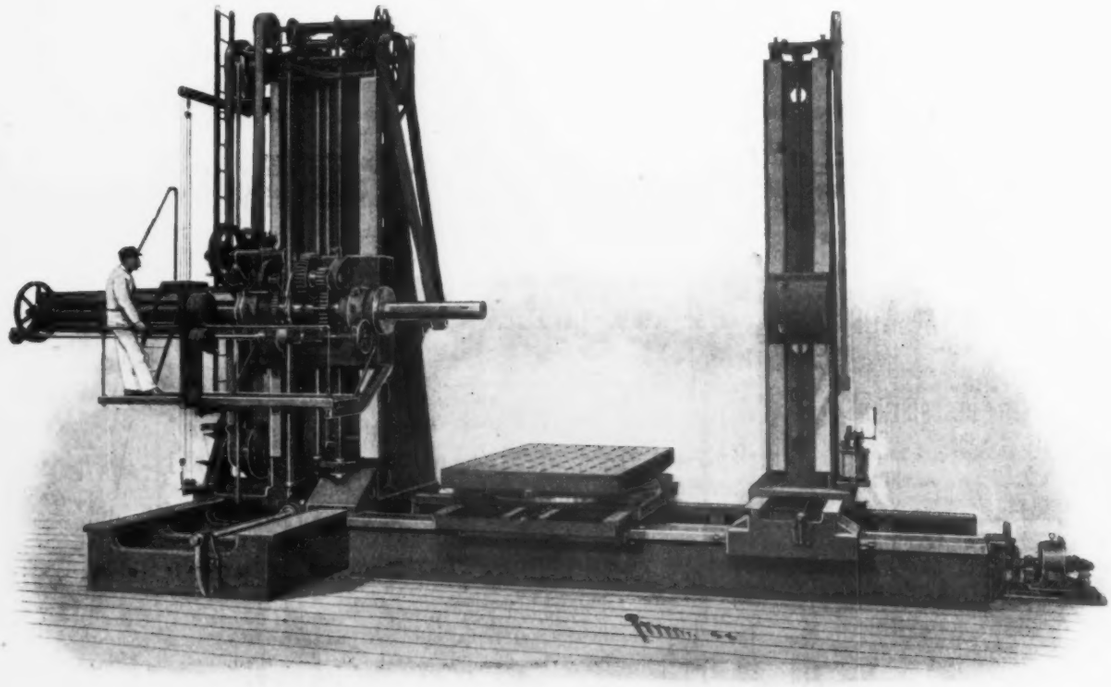
THE IRON AGE.

THURSDAY, NOVEMBER 23, 1899.

The Sellers Horizontal Boring, Drilling and Milling Machine.

The accompanying engravings show a new horizontal boring, drilling and milling machine built by Wm. Sellers & Co. (Incorporated) of Philadelphia. The machine has a supplementary bed at right angles to the main bed, which carries an adjustable work table and an adjustable outboard support for the boring bar. In addition there is provided, when required, a slotted floor plate for work too large for the auxiliary bed. The saddle carrying the outboard support is arranged so that it may be removed from the bed and placed on the floor plate when desired. The machine is provided with a saddle 8 inches in diameter. The hight of the principal upright or column carrying the spindle is 15 feet 9 inches. The total length of bearing on the bed is 8 feet. The width of the upper surface of the bed is 7 feet, and the depth of the bed carrying the upright 24 inches. The column has a longitudinal movement on the bed of 22 feet. The saddle carrying the spindle has a movement on the face of the column of 10 feet 1 inch. The stroke or movement of the spindle in the direction of its axis is 8 feet. The main bed is 32 feet 2½ inches long. The base of the column is scraped and fitted to the bed and provided with proper shoes or gibs. The bearing of the saddle on the column is 4 feet vertically by 4 feet 6 inches horizontally. There is no horizontal movement of the saddle on the upright, but the work table is provided with a traverse on the supplementary bed so that it may be moved to or from the face of the boring and milling head, as desired.

The column and saddle are provided with the following motions: Quick power traverse of the column of the bed, in either direction, and quick power traverse of the saddle up and down the column. All operations for milling, drilling and boring are controlled by hand levers placed within convenient reach of the operator, as shown in Fig. 1. The saddle is not counterbalanced, being provided with a power lifting gear which will readily and accurately control its vertical movement without the complication of a counterweight. The spindle is driven only through the cast iron sleeve which carries it, but is provided with 90 speeds, variable from 1.2 turns per minute to 150 turns. The feeds for boring and drilling, per revolution of spindle, vary from less than 0.01 to 4.3 inch. The milling feeds vertically and horizontally vary from 9-16 inch to turn of spindle to 21 inches. The speed of the quick traverse for the boring head for the upright and for the spindle may be varied from less than 5 to 7 feet per minute.



THE SELLERS HORIZONTAL BORING, DRILLING AND MILLING MACHINE.

The electric motor operating the mechanism is carried upon the back of the column and is controlled from the operator's platform attached to the boring head. The screw for producing the horizontal motion of the column is stationary in the bed, the nut being rotated by the driving gear.

The work table on the supplementary bed is 6 feet wide by 10 feet long, and is mounted upon a saddle arranged to swivel throughout a complete circle and graduated in degrees. This saddle has a traverse across a lower slide, which is mounted on the bed, of 7 feet. The work table is traversed along the bed by power by a separate motor.

The outboard support is also movable along the bed in the same manner and by the same motor, either being connected, as desired. The outboard support has a column measuring 5 feet 4¾ inches on the base by 3 feet 4¾ inches. The column is 26½ inches wide above the base, and carries on its face a boring bar support having a hole of 14 inches, which can be bushed down to suit

bars of less diameter. This boring bar support is raised and lowered by an auxiliary motor, carried on the back of the upright itself. The traverse of the outboard support at right angles to the supplementary bed equals 5 feet. The adjustment of the work table is 3 feet 6 inches each side of the center.

Sir William McDonald of Montreal, who has already made princely gifts to McGill University in that city, has just made a magnificent contribution to the cause of technical education in Canada. He has undertaken to bear the entire cost for three years of schools that will impart manual training in educational centers in every province of the Dominion. Sir William has placed the management of the matter in the hands of Professor Robertson of McGill University, who has engaged competent instructors to superintend the work, at the head of whom is a Scotchman who has been prominent in the organization of technical schools in Great Britain. The places selected for the experiment are Ottawa and Brockville, Ontario; Charlottetown and Summerside, P. E. I.; Montreal, Quebec; Truro, N. S.; Winnipeg and Calgary, N. W. T., and some place in British Columbia. The plan sketched out is to utilize the public schools by establishing regular classes in which the pupils will spend a portion of each day in actual work with tools.

Manufacturers' Contracting Company.

Under the laws of the State of New Jersey the Manufacturers' Contracting Company were incorporated with a paid in capital of $100,000. The company design and contract for the construction of modern factory buildings and public works. A corps of mechanical and electrical engineers are employed. The home office of the company is located at 792 Broad street, Newark, N. J. A branch office at 170 Summer street, Boston, Mass., takes care of the New England territory. W. H. Fenn, president of the company, has been associated with the trade for several years as chief engineer of the Hay Foundry & Machine Works and the Berlin Iron Bridge Company. Irenee Du Pont is secretary and treasurer of

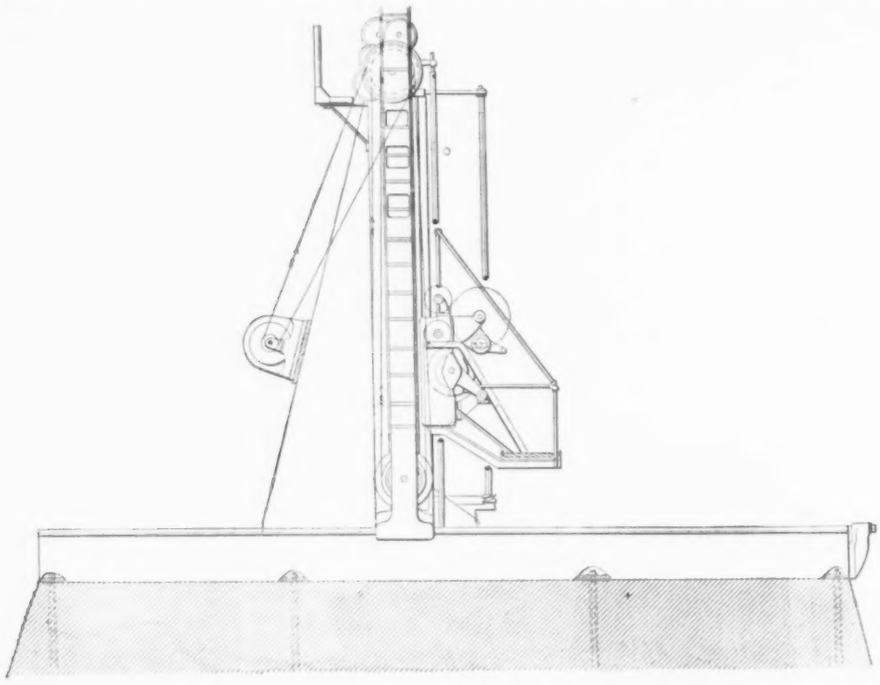


Fig. 2.—Side Elevation.

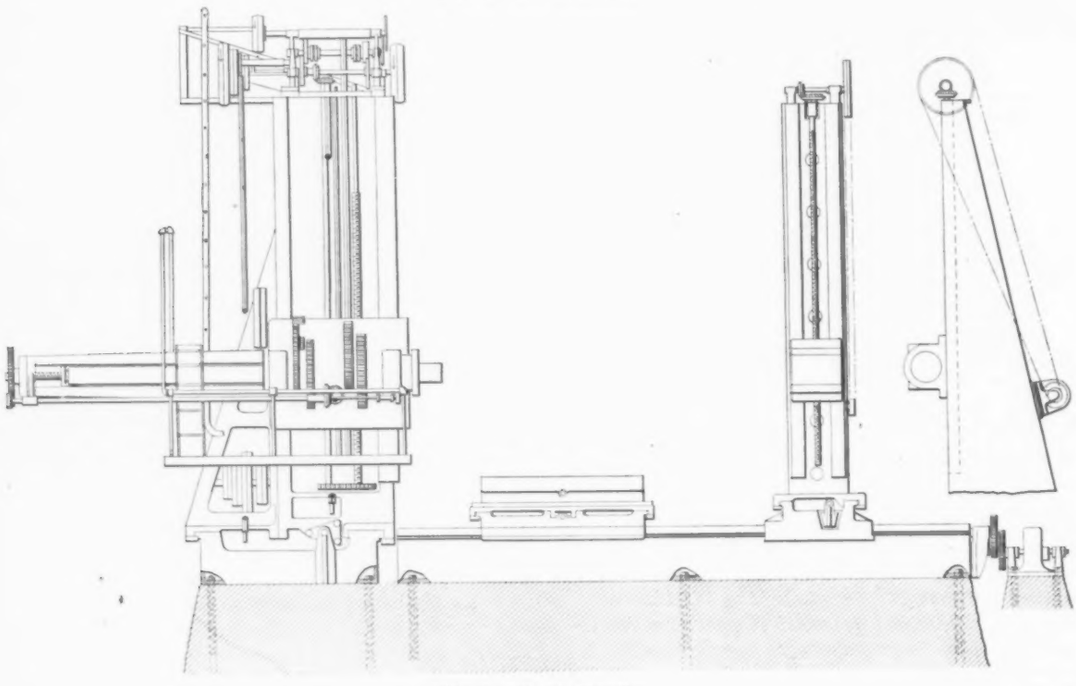


Fig. 3.—Front Elevation.

THE SELLERS HORIZONTAL BORING, DRILLING AND MILLING MACHINE.

the company. Mr. Fenn designed and engineered the reconstruction of the plant of Gould & Eberhardt, at Newark, N. J. The work has just been successfully completed.

National Tin Plate Company.

A charter was granted this week by the Secretary of State for West Virginia to the National Tin Plate Company of Wheeling with an authorized capital of $5,000,000 in shares of $100 each. The incorporators are ex-Governor James A. Beaver, Bellefonte, Pa ; W. H. Rodgers, Leechburg, Pa.; N. E. Whittaker, Wheeling, W. Va., and W. E. Tustin, C. A. Dally, A. B Dally, Jr., G. S. Lewis and W. E. Wilson of Pittsburgh, Pa. The company's charter authorizes them to manufacture iron, tin plates and other metals in various forms. They will, it is announced, make tin plates under the patents for a process invented by William Rodgers of Leechburg, Pa., which, it is claimed, by a rearrangement of the furnaces, rolls and other machinery, makes it possible to manufacture tin plate complete in a much less time than is consumed under the existing methods. The new system, it is also said, does away with the use of the acid bath in preparing the black plate for coating with tin.

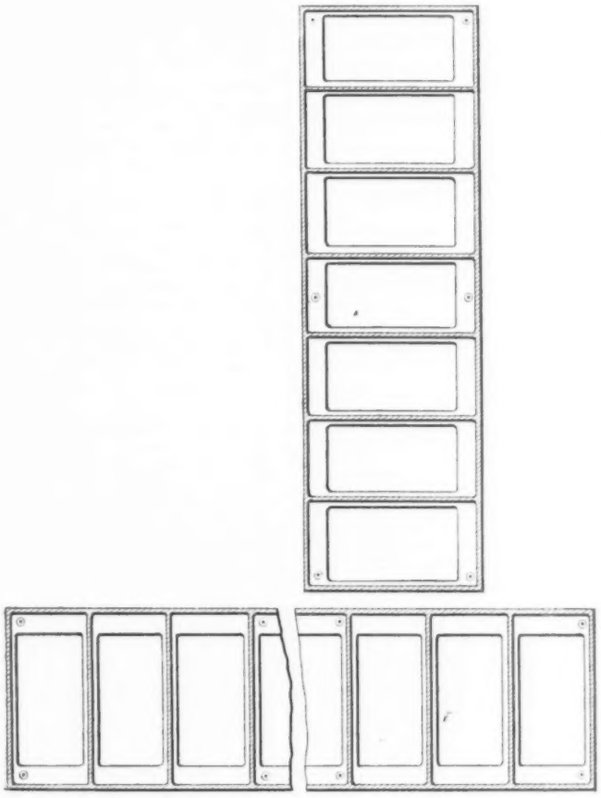


Fig. 4.—Plan of Bed.

The Chicago Building Trades Dispute.

The Chicago Building Contractors' Council have adopted an ultimatum which they have submitted to the representatives of the workingmen. In it they set forth the position which they will assume in relation to the rules and regulations of the unions in respect to the work to be done after January 1. The ultimatum is of a somewhat different tone from what might have been expected, being considerably more conservative. Temperate counsel has evidently prevailed on those who are responsible for the ultimatum. It nevertheless constitutes a platform which will require a decided change of methods by the unions. The document is as follows:

"*Whereas*, All branches of trade and commerce in Chicago, except the building trades, are sharing the general prosperity of the country.

"*Whereas*, In contrast to other large cities, a steady decrease has taken place in the number and amount of the building permits issued in Chicago.

"*Whereas*, In other cities also subject to the general advance in price of building material building operations have not been thereby retarded.

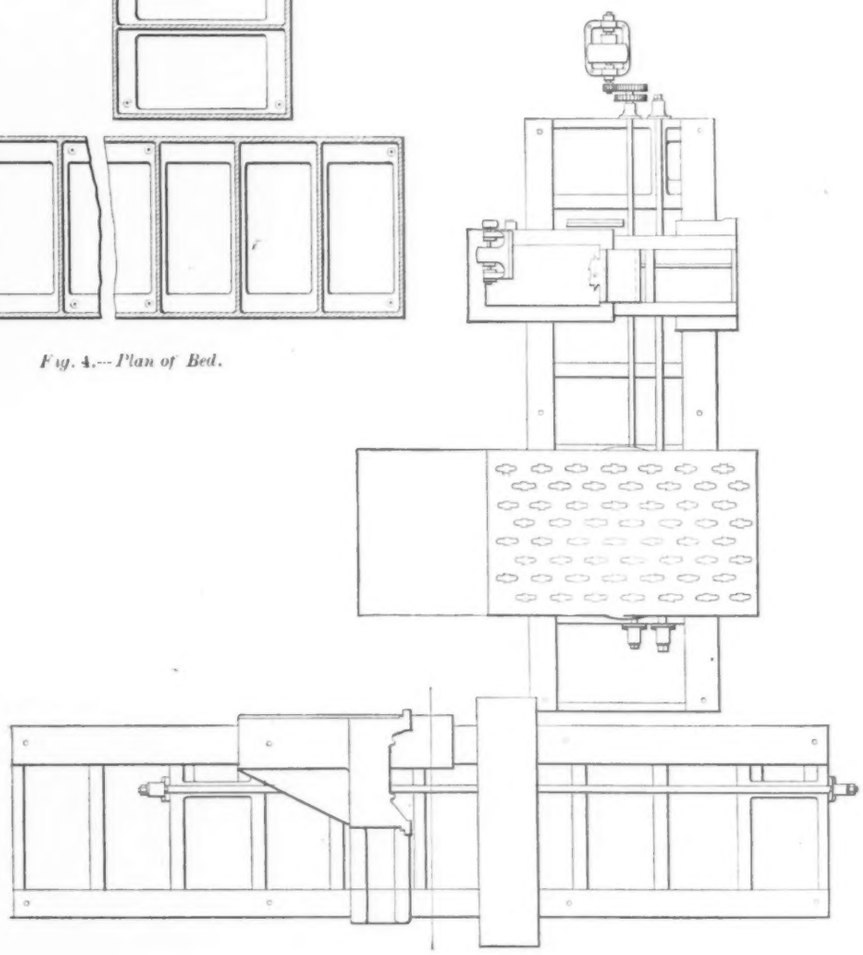


Fig. 5.—Plan.

THE SELLERS HORIZONTAL BORING, DRILLING AND MILLING MACHINE.

"*Whereas*, The cost of building construction in Chicago has been increased by the action of the trades unions affiliated with the Building Trades Council in limiting the amount of work a man may perform in a working day, in some instances cutting his productivity in half, and an additional expense has been caused by the prohibition on the part of certain unions, members of the Building Trades Council, of the use of labor saving machinery.

"*Whereas*, The cost of construction has been further increased by the costly and harassing delays caused by strikes, sympathetic strikes, and lockouts due to the arbitrary, unjust and often lawless acts of the business agents of said unions.

"*Whereas*, This state of affairs has reached a stage where the best interests of workmen, contractors, architects, owners and the city at large are in jeopardy; therefore, be it

"*Resolved*, That, in order to restore confidence and prosperity in the building trade, and to place it and the divers interests connected therewith in a position to share the revival of business enjoyed by other trades, on and after January 1, 1900, the trades represented in the Building Contractors' Council shall not recognize:

"1. Any limitation as to the amount of work a man shall perform during his working day.

"2. Any restriction of the use of machinery.

"3. The right of any person to interfere with the workmen during working hours.

"4. The sympathetic strike.

"5. Restrictions of the use of any manufactured material, excepting prison made.

"6. The right of the unions to prohibit the employment of apprentices.

"*Resolved*, That a copy of these resolutions be sent to the Building Trades Council and its affiliated unions, as outlining the position of the Building Contractors' Council with respect to conditions existing in the building trade at the present time that are detrimental to the welfare of all parties concerned, and with the assurance that there is no disposition on the part of the Building Contractors' Council to question the present rate of wages, hours, or the principles of legitimate unionism."

The various associations of contractors who are interested in building operations, and whose delegates, 40 in number, unanimously adopted the foregoing resolutions, are:

Masons and Builders' Association.
Carpenters' and Builders' Association.
Master Carpenters' Association.
Master Plumbers' Association.
Master Steam Fitters' Association.
Master Plasterers' Association.
Sheet Metal Contractors' Association.
Architectural Iron Contractors' Association.
Constructional Iron Contractors' Association.
Cut Stone Contractors' Association.
Marble Contractors' Association.
Fire Proofing Contractors' Association.
Building Elevator Contractors' Association.
House Draining Contractors' Association.

Thorite.

Brig.-Gen. A. D. Buffington, Chief of the Ordnance Department of the Army, in his annual report for the fiscal year ended June 30, 1899, speaks in terms of commendation of the new explosive, thorite. All the tests of thorite have not been made, but those that have been carried out, he says, were very satisfactory, and were designed to show that the mixture could not be exploded by friction or by shock and impact. The last tests were made by mechanical means and by firings made from cannon of various calibers, some of the firings being against plates. In the experiments against plates the shells penetrating were recovered without material deterioration. Tests were also made to show the insensibility of this substance to heat and its strength as shown by the fragmentation tests of projectiles. General Buffington says that as regards stability but little can be said at present, but a quantity of the mixture in storage for some time in an ordinary shed at the proving grounds, during which it absorbed considerable moisture, showed no deterioration. The subsequent drying of the substance indicated that its qualities when damp had not been impaired. In view of the results obtained in the tests of thorite the Ordnance Board, under whose supervision the tests have been made, reports that it is of the opinion that it is superior to any other material for filling shells so far tested and is suitable for adoption in service, at least pending the development of any better material for the purpose. It remains, however, to secure a good detonating fuse.

Secretary F. T. F. Lovejoy of the Carnegie Steel Company denies a report from Waukegan, Ill., to the effect that the Carnegie Company propose building a large steel plant near that city.

The Pennsylvania Steel Company shipped last week from Steelton 61 carloads of structural steel for the railway viaduct that is being erected in Burmah. The present forms the third shipment on the contract.

Testimony Before the Industrial Commission.

WASHINGTON, November 21, 1899.—Within the past week the Industrial Commission has taken the testimony of several manufacturers in the iron and steel trades, nearly all the witnesses representing interests opposed to the consolidations that have recently been made in their several industries.

The National Shear Company.

The first witness to be examined after the close of *The Iron Age's* report of last week was Joseph C. Pearson of Newark, a private banker, who assisted in financiering the consolidation known as the National Shear Company, who were organized on September 2, 1898, with a capital of $3,000,000, $1,125,000 preferred and $1,750,000 common stock. Mr. Pearson said that the consolidation embraced five constituent companies, all of whom came into the combination on the basis of a certain amount of cash and the balance in preferred and common stock. The contract of the witness with the combination obligated him to discount the paper of the combiation up to the amount of $200,000, with the agreement that if he carried out the arrangement for 18 months he would receive $30,000 in preferred and $225,000 in common stock in addition to 6 per cent. on the notes discounted. A clause in the contract provided that if the contract should be carried out for only nine months the compensation would be less than one-half, but if for less than nine months he would receive only the interest on the notes discounted. After several months the witness became satisfied that the combination had but little working capital, of which the discounts amounted to at least one-half, and that part of the discounts went to pay for the plants acquried by the combination. In certain cases the sellers of the plants took the notes of the combination and thus the whole enterprise was practically floated on credit. After an experience of nine months the witness became satisfied that the combination was on an unsound and unbusinesslike basis and he therefore withdrew. Up to the time of his withdrawal the stocks which he was to receive were held in escrow by third parties.

The next witness was Edward C. J. Wiss of Newark, vice-president of the National Shear Company. Mr. Wiss testified that although vice-president of the company he was not active in their management and was only able to obtain information concerning their operations upon his demand to see the company's books. The promoter of the combination was J. H. Parks, who invited the manufacturers to meet and to discuss the desirability of getting together. Subsequently Parks secured options on the various plants. Up to the present time only $2,410,000 of the capital stock had been issued, the balance being held in the expectation that options secured on other companies would be executed.

In reply to a question as to what percentage of the output of the United States in the same line of goods was controlled by the National Shear Company Mr. Wiss said that in his opinion it was less than two thirds, probably not more than 60 per cent. If the combination had secured all the plants desired it would have controlled 80 or 90 per cent. The leading concern not in the trust were the Heinisch Company.

"What was the cash value of the plants that came into the trust, in your opinion?" asked Professor Jenks.

"As a mere estimate," replied the witness, "I should say about $500,000."

"Then the combination was capitalized at more than five times the value of its plants?"

"Practically—yes."

"What has been the trend of prices in recent years?"

"It has been downward, but there has been some fierce competition not always legitimate. Two large concerns failed as the result of low competitive prices and one paid only 6 cents on the dollar."

"Has there been an advance since the combination was formed?"

"Yes, but one, I believe, only to an increase in the cost of labor, materials, &c."

Continuing the witness said that the product of the National Shear Company was chiefly shears and scissors, one company, however, making razors and pocket specialties.

"To what extent does the cost of material figure in the cost of your output?"

"It is not as large as in many metal industries, but it is a very material item when figured on a year's output. I could not say exactly what proportion of total cost it represents."

"What advantages has the combination possessed that were not enjoyed by the constituent companies before the consolidation?"

"I assume that the same savings have been effected that a large concern could make over a small one, such as the reduced cost of selling, general use of patents con-

trolled by single concerns, minimum cost of shop supplies, &c."

"Does your trade enjoy any protection from the present tariff?"

"Yes, to some extent; but even under the present law at least 90 per cent. of the small scissors less than 6 inches in length are imported. Cheap labor and a very extensive experience have enabled the Germans to make these goods cheaper than we have been able to produce them even with our tariff to help us. With regard to other classes of goods, however, the competition at home has really been at the bottom of the low prices and not the cheaper cost of foreign made goods."

The Tin Plate Industry.

The most important witness examined during the week was William H. Griffiths, an independent tin plate manufacturer of Washington, Pa. Mr. Griffiths testified that he had been engaged since 21 years of age in the tin plate business and for the last 11 years had been an active manufacturer. In reply to a question as to whether he had ever had any relations with the American Tin Plate Company, he stated that the only transaction in which he had taken part was the surrender of a plant owned by himself and his partners to the combination. He explained his use of the word "surrender" by saying that he was strongly opposed to giving up the plant, but not having a controlling interest he was outvoted and obliged to accept the offer made by the company. Replying to a question by Professor Jenks as to whether on assigning his plant to the American Tin Plate Company he had agreed not to go into the business himself the witness said that in the first option presented to his company by the officers of the American Tin Plate Company there was a clause in which he and his partners agreed to keep out of the business for 15 years, but in the final contract which was accepted there was no such condition to his knowledge.

"It should be said, however," said the witness, "that the transaction was closed with the most precipitate haste and we were forced to sign the papers without having an opportunity to examine them with the care which they deserved. We were told, however, they contained absolutely nothing except the necessary provisions for the transfer."

"With whom were your negotiations conducted?"

"With Judge Moore and Mr. Wheeler of Chicago. We were offered an option of cash or a certain amount of cash and preferred stock, with some common stock thrown in as a bonus."

"Have you re-entered the business of manufacturing tin plate?"

"I have begun building another plant."

"Have you had difficulty in securing machinery?"

"No great difficulty, but I have had ample evidence of the efforts of the American Tin Plate Company to prevent manufacturers from obtaining machinery."

"Have the American Tin Plate Company secured a monopoly of tin plate machinery?"

"No, but they have gone far enough in that direction to embarrass parties desiring to go into the business. In the first place, they control patents on the leading pickling machine, although there is another unpatented machine that gives very satisfactory results. The chief embarrassment arises from the fact that 13 foundries and machine shops have entered into a compact not to furnish tin plate machinery to any one outside of the American Tin Plate Company. There were recently two companies manufacturing this class of machinery that were willing to supply independent tin plate manufacturers, but I have had evidence that at least one of these has experienced a change of heart. There was formerly a manufacturing firm at Avonmoore with whom I made a contract, under the terms of which I was to secure certain tin plate machinery when desired. Recently I placed an order, which, however, was ignored. I made an unsuccessful effort to find out what the difficulty was, but was unable to do so until I received a call from Mr. Banfield of the American Tin Plate Company, who stated that he had recently invested considerable money in the Avonmoore concern and could not see how under the circumstances this firm could longer supply machinery to parties outside the combination. Thus, although I had a written contract, I have been unable to get the machinery from this concern. The Canton Rolling & Machinery Company are, I believe, willing to supply independent manufacturers, but I do not know to what extent they will be able to meet the demand."

"Is it a fact that the American Tin Plate Company have agreed to take the entire output of tin plate machinery manufactured by the foundries and machine shops that have made this compact you refer to?"

"I have seen that statement made, but it is wholly misleading, for the same kinds of machinery are sold to other manufacturers who do not make tin plate. I know that parties desiring rolls for making common sheet iron have to sign an agreement not to use those rolls for the manufacture of tin plate for the period of two years. My information comes to me direct because certain of these manufacturers of machinery endeavored to induce me to go into the sheet mill business and described to me the form of lease which I would be required to sign in order to get the rolls. The lease provides for a two-thirds payment down, the balance in two annual payments. In case the machinery is used for making tin plate within the two year period it is to be forfeited. I also know that when these leases have been signed by manufacturers who secure these rolls the leases are turned over to the American Tin Plate Company."

"How could a manufacturer making such a lease satisfy himself that the sheets which he rolled might not be used by parties to whom he sold them for the manufacture of tin plate?"

"That would not be difficult; the gauge would indicate it, although what is known as "28" is not unlike the material used for making stove pipes, household utensils, &c. The finish required would probably create a suspicion. I think the manufacturer would have to be very dull who permitted himself to be deceived."

"What has been the effect upon the manufacturers of tin plate machinery of their combination with the American Tin Plate Company?"

"I think there is a very strong disposition on the part of the foundrymen to break the compact, but there is considerable reluctance on the part of individuals to be the first to make the departure. I am sure they are not receiving anything like the orders under the trust that they received under the independent *régime*."

"What is the attitude of the American Tin Plate Company with regard to jobbers' brands?"

"Most formidable and aggressive. They will make no brands unless the same are assigned to the Tin Plate Company. I have here a copy of an agreement which contains a provision under which the jobbers agree not to buy the tin plate of other parties or to have these particular brands manufactured elsewhere. A breach of this agreement operates to forfeit the brands. I know that since October 1 jobbers have been refused material because they would not agree to all the conditions imposed by the trust."

The witness here read a letter from the American Tin Plate Company addressed to an Eastern jobber stating that as the recipient of the letter had not agreed "to the conditions regarding private brands" incorporated in the regular agreement his order for plate was accepted on the basis of the mill brand, and instructions had been issued to place such brand on the goods. The witness said that the officials of the Tin Plate Company knew that the jobber would not receive the materials so branded, as it would not meet the specifications of the architects who wanted the plate and who insisted on certain brands. The architects, he said, largely dominated the jobbers' trade, each having his own favorite brand, which he insisted on securing for all his work.

Continuing the witness said at the present time there was only one mill in operation in opposition to the American Tin Plate Company. This mill was located at Avonmoore, but its output was very small as compared with that of the trust.

"Does the American Tin Plate Company control the output of black plate?"

"Yes. No independent dipper can buy black plate under ordinary conditions if the company do not want him to have it. It is possible that the Carnegie Company in a year or two will make billets or bars for independent tin plate manufacturers, but they are not in shape to do so now, as the American Tin Plate Company recently gave them a big order for bars, which in my opinion was largely in excess of the Tin Plate Company's requirements, and which therefore was given for a purpose. This order was very remarkable in view of the fact that the National Steel Company, who are closely allied with the American Tin Plate Company, have always been able to supply all the bars needed."

"What has been the effect on the dippers?"

"It has been disastrous. Some who have been refused black plate have ceased manufacture and have become jobbers, but the American Tin Plate Company have refused to sell them tin plate until they have surrendered their dipping plants. There were 20 dippers at one time, but now many of them have been forced to become redippers, buying thinly coated plates through the jobbers and recoating them. Others have sold their plants, as they could not buy either black plates or thinly coated tin plate. Recently one of the oldest dippers in the business was told by representatives of the American Tin Plate Company in Chicago that the combination would always be willing to furnish him black plate if they had it on hand. Afterward when he placed an order they declined it and wrote to him that it was not their disposition to encourage dippers."

"Is it not possible," asked Commissioner Clark, "that this refusal was based on a lack of material?"

"No," replied the witness. "The American Tin Plate Company have 272 mills, of which 80 are closed down."

"Do you think the combination of independent manufacturers was necessary at the time it was made in order to save the manufacturers from disaster."

"Not at all, except perhaps in the case of a few badly managed concerns. As an illustration I will say that when plate was worth $5.75 per box we made 100 per cent. profit and when it was only worth $2.60, about the time the trust was organized, we cleared 20 per cent., and I have never made less than that as a manufacturer."

"Do you regard present conditions as absolutely preventing independent manufacturers from operating?"

"No. Present conditions are difficult, but not insuperable. I believe individuals can run their mills more cheaply than the American Tin Plate Company. I recognize the fact that this is not true in many industries, but tin plate manufacture is peculiar in many respects. There are more details connected with manufacture than in almost any other line, and an experienced owner with vital interests at stake who is constantly on the ground will cudgel his brain from morning till night and will keep his eye on every detail of economical production as no hired employee can."

"Does not the American Tin Plate Company employ expert superintendents?"

"Oh, yes. But who looks out for the superintendents? A district manager with six or eight plants in his jurisdiction cannot begin to give the attention to them that an owner would give. When nobody is looking after the superintendents then look out for your product."

"Does not the system of reports and the checks of one mill against another, as followed by the American Tin Plate Company, offset the difference between the supervision of owners and district managers?"

"It helps, but it does not offset. Nothing can take the place in the tin plate industry of the close supervision of an interested owner who is himself an expert tin plate maker."

"In your opinion had the competition or prices got to a point a year ago compelling this combination to be made?"

"No, sir; I do not think so. And as I have said before I do not think the American Tin Plate Company can produce their output as cheaply as independent manufacturers."

"How do present prices compare with the cost of materials?"

"I can only give you a few figures, but I will say that coke plates which sold in 1898 for $2.60 cost about $2.40 to make, and at that time we paid $17.50 for bars. To-day bars sell as high as $40. The American Tin Plate Company may possibly buy bars as low as $30, which I calculate means a cost to manufacture equal to about $3.54 per box of plate now selling for $4.65. Of course I have no means of knowing what they pay for bars, but these figures are made on the basis of all the considerations of which I have knowledge."

"What is the feeling in labor circles toward the trust?"

"I believe it to be on the ragged edge of desperation. A small straw showing the way the wind blows is the fact that I have received applications from 150 rollers for places in the small mills which I am now building. Each mill will employ three rollers and my plant will embrace seven mills. The American Tin Plate Company employ 816 rollers."

Mr. Griffiths read a letter which he said was addressed to him by a practical tin plate workman of the better class who was usually selected as a member of the laboring men's committees to represent them in their negotiations with their employers. The document was of considerable length, and as the witness stated it gave the extreme labor view of the situation. The writer said that the coming winter would see more tin plate men idle than ever before in the history of the industry, owing largely to the methods of manufacture pursued by the trust. Individual producers kept their mills running through the winter season and stored their goods, but the American Tin Plate Company did not follow this plan, preferring to shut down mills when their output was not required by the trade. In addition a very peculiar situation existed with regard to the mills at Monessen, Pa., and at Newcastle. For special reasons the agreement between the Tin Plate Company and their employees made at Chicago permitted the mills at Monessen, Pa., to be operated on a lower scale of wages, and therefore the American Tin Plate Company had decided to keep them in operation while other mills at which the Amalgamated scale was paid were shut down. At Newcastle the mills were required to turn out a larger output per capita of employees than the scale called for. As an illustration of the present situation the writer stated that a committee of workmen recently waited on one of the managers of the American Tin Plate Company and urged him to start up the Cumberland mills, which were idle. In reply the manager said that the mills would be started if the workmen could manage a concession of 10 cents per box on the product. This desired concession, Mr. Griffiths explained, was accounted for by the American Tin Plate Company by the statement that there was a freight discrimination equal to that amount against Cumberland, but in his opinion this was absurd, as the Newcastle mills, which are running full time, are 200 miles further from the market than Cumberland. Under individual ownership the Cumberland mills were always able to compete with Newcastle and other points. In reply to a question by Commissioner Ratchford the witness stated that while the views expressed by the writer whose letter he had read were extreme yet in his opinion there was a great deal of truth in the statements made.

Reverting to the question of prices Professor Jenks asked the witness if in his opinion *The Iron Age* would furnish a safe guide to the commission for recent years, to which Mr. Griffiths replied that it undoubtedly would, as he had never detected an error in its statements.

Commissioner Clark here took up the question of the influence of the tariff on the tin plate industry and elicited from the witness a statement that in his opinion the industry was established on a firm basis by reason of the favor shown it in the McKinley bill.

"Can it be said," asked Mr. Clark, "that the tariff is the father of the tin plate trust in any sense except that the industry was originally encouraged to be established under a protective tariff?"

"No," replied the witness. "The tariff has no more to do with the business of the trust than the business of the independent producer. It simply enables them both to make a profit."

"Do you believe that the American Tin Plate Company enjoys any freight discrimination?"

"No," replied the witness. "Except the legitimate one in being able to ship to their customers from the nearest point."

"Have prices been increased by the trust?"

"Only as materials have advanced, and perhaps not proportionately."

"If the tariff was reduced would the price of tin plate be reduced?"

"It would probably have that effect."

In conclusion the witness said that in his opinion a plant of six mills would enable a manufacturer to take advantage of all economies effected by the proper division of labor and that such a plant constituted the limit of economical management by one good man. Under present conditions in Wales a four mill plant was regarded as the unit of economical management.

The Can Manufacture.

The last witness examined was H. F. Going of Baltimore, a large canner of food products and until recently an extensive manufacturer of cans. He stated that he had been in the business since 1864, but while he still maintained an interest in the concern with which he had been connected for many years he was not now associated with its active management. He had had active charge of the manufacture of cans from 1868 to 1894. At first he had bought all of his tin in Europe, but the American industry had made such strides that recently it was stated by an expert before the Royal Institute of Engineers in England that American machinery for the manufacture of tin plate was so much superior to that employed in Great Britain that Wales could only hope to hold its share of the output by reason of its cheaper labor.

Replying to a question as to whether the organization of the trust had resulted in the deterioration of the product the witness said that he was reliably informed that such was the case. There had been a tendency in that direction for the past two or three years, and within that length of time he believed a reduction had been made from 5 to 2¼ pounds of tin per 100 pounds of black plate, most of the reduction having been made since the trust was organized. The result of employing a thinly coated plate in the canning of food products is to give the contents a dark and unsightly appearance owing to the action of the liquids on the exposed black plate, which is not fully protected by a very thin and uneven coating of tin.

The present output of cans in the United States, the witness said, was about 200,000,000, the product having been enormously increased by the invention of machines which were capable of performing every process in their manufacture. As to the attitude of can manufacturers toward the trust the witness said it was hostile, for the reason that the combination was in position to crowd them in the matter of price, and—which was more important—no maker could at present be sure of securing the quality of material which he desired. When there was competition among individual producers qualities were higher and the orders of extensive can makers received the highest consideration.

In conclusion the witness said that he did not know that the present condition of affairs called for any special legislation, as in his opinion all large combinations would ultimately fall of their own weight. W. L. C.

The Schlicht Combustion Process Company, who have occupied an office in the Marquette Building, Chicago,

for some time, have found their business expanding so rapidly that they have secured the entire building at 68 Lake street, which they will occupy the coming week.

Electric Tramways and British Industry.

BY HAWTHORNE HILL.

LIVERPOOL, November 7, 1899.—The interest in the subject of electric tramways now being manifested throughout Great Britain indicates the beginning here of an era of progress in this field such as has been experienced already in the United States. It is hardly necessary to add that any development in this regard cannot fail to benefit the American trade in materials and machinery, as well as American engineering talent. Within a few days past there have been proceedings in relation to electric traction in the councils of 30 or more towns in the United Kingdom, including London, Liverpool, Birmingham and Dublin, in several of which places a beginning already has been made. It would seem that a country, so populous in proportion to its area, and in which so large a share of the people live in cities and towns, would be a paradise for promoters of electric tramway companies. The fact that such has not proved to be the case affords an illustration of the difference in conditions of doing business in different countries that ought to be suggestive to all Americans who are concerned about foreign trade.

The reason for the delay until now in the introduction of electric railways into England has not been that no need has existed for better transportation facilities. There is to be considered (1) the conservatism of the true Briton, natural in a country so much older than the United States, and bound in so many more respects by tradition and precedent, and (2) the effect upon the transportation problem in cities of the growing sentiment in favor of municipal ownership.

There are people who oppose the introduction of electric traction from the foolish nation that it will rob of employment a lot of men now conveying passengers by other means. Thus the street car drivers of Limerick were recently moved to give vent to their feelings on the subject in a riot. And only to-day an intelligent looking man to whom I spoke in one of the Liverpool parks evidently had misgivings in regard to the new fangled cars, for he had heard that "one life had been lost on their account already." I wondered how he would have felt had he lived in Brooklyn during the past five years! But conservatism on the part of the people is not an unsurmountable barrier. It has not been unknown when measures of progress have been proposed in the United States, but when the possibility of a new enterprise paying a good dividend has been assured, capital generally has been forthcoming, and the "old fogies," if they have not yielded, have simply been ignored. Capital as a rule is not wanting in London, when a good investment offers, but I am assured by a fellow American, now on this side of the Atlantic, that it would be easier to raise money over here for a tramway system in any city of the United States than for one in England, owing to the second consideration I have mentioned.

The really great obstacle to the organization of electric railway companies in England is that the municipalities are almost certain to claim an option on the roads, and the feeling is that, in case there should be good dividends in sight, the city would exercise its option, whereas if it proved not to be a financial success it might be left in the hands of the stockholders. I do not understand that the municipalities are in every case especially concerned about owning the tramways. But the introduction of electric lighting in Great Britain has been widespread, and as a rule the plants are owned by the towns. Not unnaturally, therefore, when the suggestion is made to build a street railway, the proposal comes up that the lighting and traction services might be operated economically together. In one case recently a proposition has been discussed in two town councils relative to a connecting electric road, but "the barrier to agreement is as to who shall supply the current." In some cases the introduction of electricity must be preceded by the purchase, by the municipalities or otherwise, of the existing horse tramways, and this is not always an easy matter. The Council of Exeter, for example, are willing to pay for the local horse tramways, the valuation agreed upon by appraisers, with a bonus of 10 per cent., but the syndicate which has prudently gained control of the roads stands out for a bonus of 40 per cent. Thus each town appears to have troubles of its own, in addition to those which apply generally.

Americans do not need to be told in how many ways the building of a street railway by any city might prove more expensive than if built by private enterprise, or how unsatisfactory it may be for private parties to build a line under regulations enforced by a town electrical engineer, such as now appears in the list of officials of many British municipalities. But not only do local authorities have to be consulted, but the National Board of Trade as well. The situation would be much the same if a proposition by private parties to building a new electric line on Staten Island had first to be approved by the Municipal Legislature of New York, and then by the Treasury Department at Washington, always with the proviso that the city might acquire it, after a certain time, from the private capitalists constructing it. It is easy to see, therefore, why syndicates of capitalists in London have not hastened to invest in the building of local electric tramways. Another complaint against the municipal finger in the pie is that of the foreign electrical engineers, who have been employed in the construction of roads here. If foreign material or machinery is used, it is quite possible that the practice which it involves may be at variance with that favored by the local official having supervision of the work, so that friction results, preparing the way for general dissatisfaction in the end.

Yet the "trolley" road is making progress in spite of every obstacle. Limerick will build 6 miles at once despite the riots in opposition; electricity soon will supersede steam on the important system of the Birmingham & District Tramway Company; and the local opposition to an electric road from Blackheath to Woolwich, favored in the London County Council, is dying out. The latest steamer from New York brought an experienced engineer, in the interest of an American electrical concern, who comes to construct tramways in London and in Bristol. The same steamer brought home a committee from the town of Halifax, who had gone to America to inspect the electrical tramway practice there, with a view to having it substituted for the system already in use in that town. Just now the Town Council of Salford are considering an American tender for 100 electric tramcars, and there are other indications of a chance for American trade in the same direction.

The subject of electrical railways, no matter who builds them, has for Great Britain an important industrial bearing little appreciated as yet in America. Their wide introduction here will open the way for a radical reorganization of the industrial situation, without which many English branches must fail to maintain their present relative importance. The salvation of industrial England must be through the improvement of the condition of the workingmen, by means more far reaching than any urged thus far by the leaders of their strikes. Better means of transportation are needed to make it possible for men to go between their homes and their work cheaply, quickly and comfortably, and give them a wider range in which to select their homes. I know a man whose young son was apprenticed for five years in an engineering works, during all of which time he had to rise at 4.30 in the morning and was deprived of sleep until late in the evening, and his case is not exceptional. We hear much of the number of hours of work; but how many hours do the men spend in getting to and from work? In solving the latter problem the electric tramway is to play an important part, just as it has improved the conditions of suburban life for the toilers in cities in America, which needed a change far less than the industrial centers of Europe. It will be a great step when the early hour for starting work in England and the stopping of work for breakfast are done away, and this is one feature that will grow out of improved means for transportation.

An important technical journal last week asserted that if the London County Council had willed it every main road leading out of that city would long ago have had electric tramways extending for 20 miles, and no doubt the assertion is correct. If it had further asserted that, with such an innovation, industrial Britain would now be on a vastly better footing, I believe it would have been equally correct.

The Berlin Iron Bridge Company, East Berlin, Conn., shipped last week 27 carloads of structural material consigned to the United States Commission in Paris. The material is to be used for the steel frame work of a typical American machine shop for the American exhibit of iron and wood working machinery at the Paris Exposition. The building will be 343 feet long by 74 feet wide, and will be equipped with power, in order that American exhibits may show their machinery at work. At the same time it will itself serve as an exhibit of a typical American machine shop with all modern appliances.

E. R. Geasseller of Cleveland, Ohio, and John R. Lagarde of Anniston, Ala., have purchased 2000 acres of ore land at Gladdel, Ala., near Chattanooga, Tenn. They paid $29,500 for the property. A company known as the Anniston-Brown Ore Company have been organized with a capital of $50,000 to develop the property.

The Naval Architects and Marine Engineers.

The seventh general meeting of the Society of Naval Architects and Marine Engineers was held at the house of the American Society of Mechanical Engineers, New York, last Thursday and Friday. The convention was one of great interest, the papers being of the utmost value to all who are concerned with the design, the building and the handling of ships. Among those in attendance were:

Almy, D., president Almy Water Tube Boiler Company, Providence, R. I.
Babcock, W. Irving, manager Chicago Shipbuilding Company, Chicago.
Baxter, Wm. Joseph, Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.
Bowles, F. T., Naval Constructor, U. S. N., Navy Yard, New York.
Bunce, Francis M., Rear Admiral, U. S. N., Commandant Navy Yard, New York.
Capps, Washington L., Naval Constructor, U. S. N., Washington.
Cassidy, Arthur B., leading draftsman Bureau of Construction and Repair, Navy Department, Washington.
Coryell, Miers, consulting naval architect and marine engineer, New York.
Cox, Irving, naval architect, New York.
Dickey, Wm. D., manager Erie Basin Dry Dock Company, New York.
Dickie, Geo. W., manager Union Iron Works, San Francisco, Cal.
Du Bosque, F. L., assistant engineer floating equipment Pennsylvania Railroad, Jersey City, N. J.
Durand, William F., professor naval architecture and marine engineering Sibley College, Cornell University, Ithaca, N. Y.
Fletcher, Andrew, North River Iron Works, Hoboken, N. J.
Hill, Warren E., vice president Continental Iron Works, Brooklyn.
Kafer, John C., superintendent Morgan Iron Works, New York.
Kirby, Frank E., naval architect, Detroit Dry Dock Company, Detroit, Mich.
McFarland, Walter M., Passed Assistant Engineer, U. S. N., Bureau Steam Engineering, Navy Department, Washington.
Magee, Geo. W., Chief Engineer, U. S. N. (retired), Brooklyn.
Morse, Henry G., president Harlan & Hollingsworth Company, Wilmington, Del.
Mosher, Charles D., mechanical engineer, New York.
Niblach, Albert P., Lieutenant, U. S. N., Washington.
Nixon, Lewis, manager Crescent Shipyard, Elizabeth, N. J.
Parsons, H. de B., consulting engineer, New York.
Peabody, Cecil H., professor of marine engineering and naval architecture Massachusetts Institute of Technology, Boston.
Roelker, H. B., mechanical engineer, New York.
Rowland, T. F., president Continental Iron Works, New York.
See, Horace, naval architect and marine engineer, New York.
Stevens, Edwin A., Hoboken, N. J.
Stratton, E. Platt, mechanical engineer, manager American Ship Masters' Association, New York.
Woodward, Joseph J., Naval Constructor, U. S. N., Newport News Shipbuilding & Dry Dock Company, Newport News, Va.

The annual address of the president, Clement A. Griscom, who is now in Europe, was in part as follows:

"This society, now seven years old, emerges from a period of infancy at a propitious time, and the condition of its affairs is a subject of congratulation. Having been organized with about 430 members and associates, that number by steady annual increments has now reached 573 and at this meeting nearly 100 more will be added to the roll. Your managers believe that the society is of great value to the profession, and it is certain that the results are obtained at a minimum of expense to the members.

"The society will undoubtedly join me in congratulation to one of its members upon the masterful skill shown in the design of a certain yacht, whose record in the international races induces me to charactize this as the Columbia year for naval architects. Yet the immediate prospect of another challenge having its parallel in trade makes it necessary to caution you that all your energies are still required to meet certain conditions still adverse to the shipbuilding interests of our country.

"Whatever may be the political, moral or constitutional aspects of a policy of expansion it is not without advantages to shipbuilders. The large number of vessels purchased by the Government last year for use of the army and navy, together with increasing use of steam vessels in the coasting trade, have produced the greatest activity ever seen in our coast shipyards, both on the Atlantic and Pacific oceans. The orders for large steel steam vessels now taken exceed largely those of any year in our history.

"The record on the great lakes is such as to tax the capacity of the shipyards of that district until the fall of 1900. There are now building or to be built on the lakes 26 steel vessels of large size of an aggregate value of about $8,000,000 and an aggregate carrying capacity of 154,000 gross tons. These vessels comprise one passenger vessel, two steel barges of 7000 tons capacity each, five steamers of 3000 tons capacity, suited to trade between the great lakes and the Atlantic seaboard, and 18 steam freight vessels of about 6000 tons capacity.

"We have also witnessed in the past year the entrance of lake shipbuilders into the Atlantic trade.

"On the seacoasts we have the unusual condition of nine steamships building for ocean commerce. At least nine large steamers, recently built, have been added to the coasting or West Indian trade in the past year.

"This is probably the first oocasion that I have found any statistics in regard to American shipping industries of a character desirable to contemplate, and even now I feel obliged to accompany them with a note of warning—'One swallow maketh not a summer.' The proportion of our export and import trade now carried in American bottoms is too small to be mentioned and last year was smaller than ever before. To make this percentage a respectable one would require ten times the number of American shipyards working at full time for a number of years. While we have the materials, the tools and mechanics, the successful building of a modern vessel from a commercial point is in reality a triumph of organization of the multitude of diversified trades which it includes This stage is yet to be reached and can only be attained by regular systematic production Production depends upon a market and upon traders who see a profit to be made in ship owning under the laws of the United States."

The ballot for officers for the ensuing year resulted as follows: President, Clement A. Griscom: first vice-president, Rear-Admiral W. T. Sampson: vice presidents: Rear-Admiral F. M. Bunce, Charles H. Cramp, Naval Constructor F. L. Fernald, Chief Constructor U. S. N. Philip Hichborn, ex-Engineer in Chief U. S. N. Charles H. Loring, Engineer in Chief U. S N. Geo. W. Melville, George W. Quintard, Irving M. Scott, Edwin A. Stevens: secretary and treasurer, Naval Constructor U. S. N. Francis T. Bowles.

The first paper was by Spencer Miller, on

"Coaling Vessels at Sea."

The author first reviewed the subject, presenting data concerning what had already been done in this direction, after which he described his own experiments. October 15, 1898, the author performed an experiment in New York harbor with a tug towing a sloop, using a quarter sized model. Shear poles were mounted on the tug and blocks on the mast of the sloop, the distance between points of support being 100 feet. An endless rope was employed, being in accordance with the plan shown in Fig. 1. A movable sheave in the bight of the cable aft the mast was held taut by a line connecting it with a sea anchor or towing cone dragged in the sea behind the sloop By this plan it will be observed that the tug towed the sea anchor as well as the sloop, the latter merely supporting the rope as it passed over. A carriage gripped to the upper part and provided with wheels to roll on the lower part served to carry the bags of coal over from sloop to tug. As the exoeriment was performed in a storm no photographs were taken. The storm was so severe that the sloop shipped water over the bow and both boats rolled and pitched very badly. In spite of this, however, the bags of coal were conveyed across the space as though the sea was smooth, the sea anchor serving to perfectly act as a compensator, maintaining a constant tension on the endless conveying cable. If such a plan were adopted the sea anchor would have to be selected in accordance with the speed of towing. The greater the speed the smaller the cone required.

MILLER CONVEYOR ON THE U. S. S. "MARCELLUS."

It is proposed with this device to take the collier in tow or the collier to tow the war ship, leaving the distance between ships about 300 feet. This method of securing boats at sea is recognized as being safe.

The war ship to receive the coal will erect a pair of shear poles on its deck, which, secured by guys, will support a sheave wheel and a chute to receive the load.

The collier is provided with a specially contrived engine—Fig. 2—located aft the foremast, having two winding drums. A steel cable ¾ inch in diameter leads from one drum to the top of the foremast, over a sheave, thence to the sheave on the war ship, back to another sheave on the top of the foremast, thence to the other drum. This engine gives a reciprocating motion to the conveying rope, paying out one part under tension; a carriage secured to one of the parts passes to and from the war ship, its load clearing the water intervening.

A carriage of special form is provided with wheels which roll on the lower part to the conveying cable and grip slightly but sufficiently the upper part of the cable. This carriage will carry bags of coal 700 to 1000 pounds. The load is held by a hook pivoted at the bottom of the carriage, which hook is held by a latch. When the carriage comes in contact with the rubber buffer on the sheave block at the war ship this latch is pressed in, thereby releasing the hook and its load. Should the carriage strike heavily at either terminus the upper part of the cable will slip through the grip and no damage will be done.

As soon as the bags are dropped the direction of the rope is reversed and the carriage returned to the collier. During the transit of the load an elevator car decends to the deck, bags of coal are placed thereon, suspended from

Fig. 1.—Coaling Vessels at Sea.

a bale and elevated again to the stops on the guides, so that when the carriage has returned to the collier the pointed hook finds its way under the hanger supporting the coal bags. The instant the load is hooked on the direction of the ropes is again reversed, the carriage takes its load from the elevator and transfers it across the intervening space to the war ship and drops it again into the chute.

The engine for operating the conveyor is of peculiar construction. It runs practically all the time in one direction, its speed being varied by the use of the throttle. The drum near the foremast is provided with friction mechanism, so that it is capable of giving to the rope a tension anywhere from 1000 to 4000 pounds. This drum is operated by a lever. The other drum is of special form, employing two dry metallic surfaces in contact. This drum is adjusted so that it will slip under any strain exceeding, say, 3000 pounds. It may be adjusted while the operation is going on, the tension being increased if the load sags too much and diminished if the deflection is unnecessarily small. The forward drum will be referred

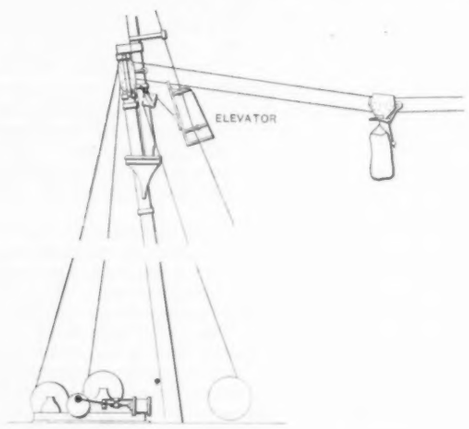


Fig. 2.—Showing Location of Engine.

to hereafter as the 4000-pound drum and the other as the 3000-pound drum. When the engine is running the tendency of both drums is to draw both parts in, one to the extent of 4000 pounds and the other 3000 pounds. The effect therefore is for the 4000-pound drum to prevail and overhaul the 3000-pound resistance, and it is this resistance that sustains the load in its transit between the two boats. Through the co-operation of the two drums the conveying distance between the two boats is compensated for and a practically uniform tension sustained during the transit of the load. If the points of support on the two ships approach each other (during the transit of the load) the effect will be that the drum pulling 4000 pounds will take up the slack so produced and the 3000 drum will temporarily cease slipping or at least the slip will be reduced. If, now, the boats pull apart the 3000 drum will simply slip the faster. All that is necessary, therefore, in the operation of this machine is to see to it that the speed of transit is in excess of double the speed at which the two boats come together.

After the load is dumped at the war ship the operator of the engine releases the friction lever on the 4000-pound drum, thus reducing the tension on the lower part to some point considerably below 3000 pounds, whereupon the 3000-pound drum acts to haul in rope and thus returns the carriage to the collier.

The speed of conveying is about 1000 per minute, consequently the load will be taken from the collier and deposited in the war ship in about 20 seconds.

Attention is called to the fact that the total tension on these two parts of rope will never exceed, say, 8000 pounds; furthermore, should the ships pull away from each other and the tow line part the only effect will be to unwind the rope from one of the drums, its end falling into the water, whereupon the other drum will wind in the other end of the rope and recover the carriage attached thereto. The drum used for operating the conveyor also serves to wind up and store the cable when the collier is not coaling at sea.

"Causes for the Adoption of Water Tube Boilers in the U. S. Navy"

was the title of a paper by Engineer-in-Chief Geo. W. Melville. The following extracts are presented:

The modern battle ship is a monument to the greatness of the minutiæ of design. It has been gradually built up from the sailing beauties of a century ago. Steps in advance have been slow, generally speaking. We cannot advance by leaps and bounds in marine work. Here genius is hampered by such conditions as make any step in advance a great achievement. Of course we have the case of Ericsson and the "Monitor," but this was a case not only of special conditions, but also of a most exceptional man. Naval architecture is a pyramid, each stone of which is supported by all of the preceding ones. The size of the stone that one man can add to the pile depends, of course, upon his ability, but more especially upon his work. By hard work and by paying attention to what is going on around him any man can add his quota, but "those who, having eyes, see not; and who, having ears, hear not," are worse than useless.

ONLY WATER TUBE BOILERS IN FUTURE WAR SHIPS.

The task I have set myself to day is no mean one. I desire to show that the decision to use nothing but water tube boilers in our future war vessels is a step in advance, and that it is a natural step toward the evolution of the perfect fighting machine. I desire to show that it is no radical change, and that it does not involve the use of anything but a tried, successful and reliable apparatus that gives us positive and great advantages over the character of boilers heretofore generally used. I desire not to minimize the disadvantages following this change, but to show that these disadvantages are not only not insurmountable, but, for war ships, they have already been overcome.

In the first place, I want to state that water tube boilers are bad in principle. They carry the pressure inside their weakest parts—the tubes. A failure in a tube is followed by the opening of a fault, sometimes to a dangerous degree. In the fire tubular boiler, on the contrary, the pressure would continue to close a split tube. It is true that a failure of a boiler tube generally comes from pitting, where fire tubular boilers generally have such a great advantage as in cases of split tubes. Yet failure of tubes is the most common defect in all boilers, and a proper design would place the pressure on the outside of the tube.

WATER TUBE BOILERS WRONG IN PRINCIPLE.

Water tube boilers are, from their very definition, designed from a wrong principle, not only because of the direction of application of pressure upon the tubes, but also on account of the decreased amount of water in the boiler, of the increased difficulty of observing a leak, and of the decreased value of heating surface in water tube boilers. For this reason, as an engineer, it is with some misgiving that I state that I consider water tube boilers tactical necessities for war ships.

Builders of water tube boilers use solid drawn tubes almost exclusively for marine work. This, of course, decreases the danger of split tubes, but it does not change the mechanical principle. Some day, probably not in my time, we may hope to have a boiler having fire tubes and having the advantage of water tube boilers. Such a boiler

would force its way at once into all navies, just as water tube boilers are doing at the present day.

Disbelieving, as I do, in the cardinal principles of water tube boilers, I have sturdily opposed their adoption by our navy until now I am convinced that they must be used if we are not going to content ourselves with inferior ships to those built for other nations. Of course during the period of development of the design of water tube boilers, that even now continues, I have, in my official capacity, kept track of and taken part in the world wide experiments with their use. Water tube boilers have advantages, and I have never been blind to them. Two years ago I stated that their disadvantages had been sufficiently removed to justify their use on our war ships. Now I consider that the value of their advantages has been sufficiently developed to necessitate their use if we do not wish to be left behind in naval design.

Water tube boilers are considerably lighter than those of the old type, and their effect upon ship design may be given as follows: Of two ships having all other qualities identical, one fitted with cylindrical boilers and the other with water tube boilers, the latter will be somewhat the smaller and handier—will have somewhat less draft, and will cost less.

Limited as we are in the size of our war ships by their draft, I think that the foregoing shows that for a maximum of fighting efficiency we must use water tube boilers. The designing engineers of our naval vessels are limited in weight and space. They save little or nothing in space, perhaps, but they save greatly in weight if they adopt water tube boilers. If these can be successfully operated on shipboard they must be used because of their decreased weight. The foregoing is entirely apart from any consideration of the relative merits of water tube and fire tubular boilers, but it is conditional upon the possibility of the successful operation of water tube boilers.

Torpedo boats and destrovers in our navy have always, since the time of the "Cushing," been equipped with water tube boilers of various types. Small bent tube boilers have generally been used. There have been some cases of sad accidents in the fire rooms, generally due to carelessness in manufacture, and particularly in tube setting, but not to defective design. The boilers have proved to be quite as reliable as the extremely light engines of these boats. With the small amount of skilled attention it is possible to give to torpedo boats, and considering the character of service demanded of these small craft, I think that no engineer will to-day question that the use of light water tube boilers, with the higher speeds possible as a result, adds to their efficiency and security.

FIRST WATER TUBE BOILERS IN THE NAVY.

The first large installation of water tube boilers in our navy was on the "Monterey." Indeed at the time this was the largest installation of water tube boilers in any navy. In this monitor, as you all know, there are four round Ward water tube boilers, with two cylindrical single ended fire tubular boilers. The water tube boilers have been satisfactory. It is worthy of note that there has been very little difficulty experienced in maintaining a steady water level, although the boilers have a very small amount of contained water. Tubes have failed by pitting several times, though never with any danger to the firemen. The water tube boilers have been twice retubed by the ship's force without laying the ship up at any navy yard. On one occasion, probably with a view to thoroughly testing the water tube boilers, or to satisfy the unholy desires of some person decrying water tube boilers, the ship made a voyage of about 8000 knots, largely under forced draft, and whenever possible with all boilers in use. There was no resultant injury to the water tube boilers, which performed well throughout the trial. The combustion chambers of the cylindrical boilers came out of the trial badly bulged.

The Yarrow boilers of the "Nashville" have operated fairly successfully, though they cannot be said to be completely satisfactory on account of the amount of trouble given by bulging of drums and by leaky tubes. The first set of copper tubes has been replaced by others of steel, to considerable advantage. I believe that the latest designs of this type of boiler provide for the use of slightly curved tubes next the fire. This ought to be advantageous.

The "Marietta's" trip around South America at the beginning of the war with Spain was quite as successful as was that of the "Oregon." The first ship is fitted with Babcock & Wilcox boilers, the second with cylindrical boilers. No repairs were required to either set of boilers after the completion of the trip.

The "Annapolis" is also equipped with Babcock & Wilcox boilers, and here, as on the "Marietta," these boilers have been thoroughly successful. Indeed, a former chief engineer of the "Annapolis" has stated to me that the boilers of that ship were easier to manage in use and easier to maintain in a state of high efficiency than are cylindrical boilers.

The "Chicago" has several Babcock & Wilcox boilers, and these have so far worked in a thoroughly satisfactory manner, no failure being reported under any circumstances.

The foregoing represents the tried installations of water tube boilers in ships larger than torpedo boats and destroyers in the United States Navy. Babcock & Wilcox boilers of the shore or stationary type were installed in the old monitors, "Canonicus" "Mahonac" and "Manhattan," the old rectangular boilers being entirely worn out, and it being deemed advisable to fit these old boats for whatever service they could do. The change was commenced at the beginning of the Spanish war. Before its close the change was complete, and a somewhat greater speed was attained than with the original boilers. This change was made without injuring the decks of the monitors. The old boilers were cut up and passed out through the smokestack, down which the parts of the new boilers were passed, the latter being assembled in the engine room space. This is an instance where none but water tube boilers could have been used, and where every facility of repair and installation was of enormous advantage. For naval vessels with their protective decks the facility with which water tube boilers can be removed or completely renewed without disturbing the decks may, of itself, justify us in adopting water tube boilers.

There are building and repairing several other ships of our navy to be fitted with partial or complete outfits of water tube boilers. These include the "Alert," "Atlanta," "Cincinnati," "Wyoming" (Babcock & Wilcox), "Maine" and "Connecticut" (Niclausse), "Missouri," "Wisconsin" and "Arkansas" (Thornycroft), and "Florida" (modified Normand).

THE ECONOMICAL RESULTS FROM WATER TUBE BOILERS

were at first not particularly good. At present we get quite as good results from water tube boilers of the latest design as from the best cylindrical boilers. The ratio of heating surface to grate surface has been kept up to at least 40, although we do not yet feel warranted in allowing as small grate surfaces in water tube boilers as in cylindrical boilers. Water tube boilers lose in efficiency when forced, especially those of the straight tube type. Of course this is not of very great moment to us in a naval vessel, which is under forced draft only at maximum speed, but it is nevertheless a disadvantage.

The following table shows the relative economy of cylindrical and water tube boilers:

	Annapolis.	Marietta.	Newport.	Princeton.	Vicksburg.	Wheeling.
Type and number of boilers.....	(2 B. & W.)		(2 single ended cylindrical.)			
Displacement, tons....	1,000	1,000	1,000	1,000	1,000	1,000
Knots per ton of coal at most economical speed.....	26.38	22.27	18	19.6	21.25	16.6
Number of screws	1	2	1	1	1	2
Grate surface, sq. ft...	98	94	78	78	78	60
Heating surface, sq. ft.	3,620	3,664	2,524	2,524	2,524	2,508

The increased grate surface we have required with water tube boilers will be a positive advantage to our ships' steaming qualities. I consider that sustained sea speed depends largely upon the grate surface. Heating surface, of course, must be provided, but I should prefer an excess of grate surface to an exceedingly high ratio of heating surface to grate.

Up to this time we have had no trouble with salt water or grease in water tube boilers. Indeed we could hardly be more troubled with salt water with this type of boiler than we have been with cylindrical boilers. We suffered severely in our short war with Spain from dropped furnaces in cylindrical boilers. I do not think that a properly designed water tube boiler will give more trouble from the use of impure feed water, such as sometimes we must have at sea, than any other boiler. I do not think tubes more liable than furnaces to fail from a deposit of scale. In any event the evaporating plants of all our ships are being made adequate to give fresh feed water. The only danger of salt water in the future should come from leaky condensers.

Glancing around for a moment we find every modern naval power, from England to Japan, committed to the use of water tube boilers on the largest scale. Each of these countries has had its experience, and each has decided not only that water tube boilers can be worked, but also that they work well and that they must be used in naval vessels.

ADVANTAGES AND DISADVANTAGES.

I would naturally now come to a discussion of the claims of the adherents and opponents of water tube boilers. You have all heard these arguments, and it seems almost useless to go over them. I shall simply state what I believe to be the advantages and disadvantages of water tube boilers compared with cylindrical boilers.

ADVANTAGES.

Less weight of water.
Quicker steamers.
Quicker response to change in amount of steam required.

Greater freedom of expansion.
Higher cruising speed.
More perfect circulation.
Adaptability to high pressures.
Smaller steam pipes and fittings.
Greater ease of repair.
Greater ease of installation.
Greater elasticity of design.
Less danger from explosion.

DISADVANTAGES.

Greater danger from failure of tubes.
Better feed arrangements necessary.
Greater skill required in management.
Units too small.
Greater grate surface and heating surface required.
Less reserve in form of water in boiler.
Large number of parts.
Tubes difficult of access.
Large number of joints.
More danger of priming.

A saving in space has been claimed for water tube boilers, but I do not find this claim sound when account is taken of the increase in grate and heating surface necessary in water tube boilers to insure satisfactory working, and because of small units the space for accessibility is increased rather than diminished.

The fact that water tube boilers raise steam quickly is of the greatest advantage. I have stated elsewhere that I consider the battle of Santiago to have developed the necessity of the use of water tube boilers, whether it taught us anything else or not. It would have been of the greatest advantage to have had, during the blockade of Santiago, boilers capable of raising steam in less than half an hour. Coal need not have been used to keep all the boilers under steam all the time. The "Massachusetts" might have shared in the glories of the fight if she had been fitted with water tube boilers. The "Indiana" would have kept up with the "Oregon" and the "Texas." The "New York" would have developed at least 3 knots more speed, and the navy would have been spared a controversy. I think the "Colon" would not have gotten so far away as she did. But we did not have the water tube boilers.

The higher pressures possible with water tube boilers give us smaller and safer steam pipes and better valves. It decreases the size of the fittings and the difficulty of tracing the labyrinth of a ship's piping. It increases the efficiency of the engines. The introduction of compound engines forced us to the use of cylindrical boilers. In the same way the use of quadruple expansion engines necessitates, for economy, the use of water tube boilers.

But the quick steam raiser is, because of that very fact, not so safe as its predecesor. Of course nothing on a man of war is very safe in war time, but we want things as safe as possible, and the boilers are the keys to the situation in the modern battle ship. I think that safety in handling water tube boilers may be assured by using skill in the fire rooms. I have more than ten years' successful experience with water tube boilers on which to found this opinion, and I submit that the boilers, placed as they are behind the heaviest armor and below the thick protective deck, are, at the worst, the safest apparatus on a battle ship. If we can make them work well we would do wrong to refuse to use water tube boilers on our ships.

TYPE OF BOILER.

As to the type of boiler to be used, there are as many to choose from as there are fleas on a dog. Some one has said that a certain amount of fleas keep a dog from brooding over being a dog. So the number of varieties we have to choose from may be a good thing for all.

I have always opposed the use of boilers containing screw joints in contact with fire, and have attempted to secure boilers having no cast metal in the pressure parts. Cast steel is not yet good enough to put between 300 pounds of steam and our firemen. I believe in straight tube boilers as being easier of examination and repair than bent tube boilers. I believe in large tube boilers for the same reason, and because the tubes are thicker and have more margin for corrosion. I believe in boilers having as few joints as possible. Water tube boilers must have freedom of expansion of the various parts, and the simpler the boiler the better. It should not be necessary to introduce reducing valves between the boilers and the engines to secure a steady steam pressure at the latter, nor should it be necessary to have automatic feed arrangements to insure steady water level in the boilers. To be successful a boiler must be easy of repair. Lightness is a natural attribute of all water tube boilers, but it is not wise to go too far in this direction. The ratio of grate surface to fire surface occupied for the complete boiler plant must be as large as possible. The units should be large, the grates short and not too wide. The passage of gases through the tubes should be sufficiently long to insure economy. These gases should be well mixed before entering the spaces between the tubes for the same reason and to prevent smoke. The circulation of the water in the boiler must be free. Tubes should not be too long, and the fire rooms must always be sufficiently wide to provide for free withdrawal.

The foregoing is what we want. We have most of the above desiderata in several well-known types of boilers, and ultimately we shall discover the value of each of the foregoing points, and then it will be possible to differentiate between the various types more perfectly than we now can.

"Electric Plants of the Battle Ships 'Kearsarge' and 'Kentucky'"

was the title of a paper by Naval Constructor J. J. Woodward. These vessels are the first of the United States Navy on which the use of electricity as a motive power for the ship's auxiliary machinery has been adopted to the practical exclusion of steam. And even in the case of these vessels a distinction has been made between the auxiliary machinery for the general service of the vessel such as deck winches, boat cranes, ship's ventilating fans, ammunition hoists, and turret turning machinery, all of which are operated by electric motors, and the auxiliary machinery connected with the main propelling engines, such as air, feed and circulating pumps, forced draft blowers, ash hoists, &c., which on these ships are still driven by small steam engines. Further exceptions to the complete use of electricity for the ship's auxiliary machinery are the windlass and steering engines, which are also driven by steam.

The electric plants of the "Kearsarge" and the "Kentucky" can, therefore, only be regarded as an intermediate step between the complete steam drive for auxiliary machinery, so largely used in the past, and the practically complete electric drive for all auxiliary machinery of every kind whatsoever, whose adoption appears to be a possibility of the near future. Indeed the most serious present limitation to the extent to which the electric drive for auxiliary machinery may be adopted for service in war ships is the time necessary for the officers of the naval service charged with the care of such plants to organize and train the necessary *personnel* for the care of the dynamos and motors, and to gain that confidence in their power to maintain the plant in a constantly efficient condition which is necessary to overcome the sense of conservative distrust so apt to be felt in a new appliance or method adopted for service on board ship.

The paper considered at length the following plants:

The ship is lighted under peace and battle conditions.

Four search lights are operated.

The Ardois signal set is operated for night signaling; also, various means of communication within the ship, such as battle and range order indicators, electric propelling and steering engine telegraphs, revolution and helm angle indicators, &c.

The truck lights and ship's running lights are operated, also portable diving lanterns.

The two turrets containing the 8-inch and 13-inch guns are rotated, the 13 inch guns elevated, ammunition hoisted for both 8-inch and 13-inch guns, rammers of 13-inch guns operated, and special ventilation provided to blow out gases out of bore of 8-inch and 13-inch guns.

Ten endless chain ammunition hoists are operated, eight of them supplying the 5-inch broadside guns and two supplying 6-pounder and 1-pounder guns on upper deck. Two winch type of hoists are operated, supplying ammunition to the 6-pounder guns in the after cabins.

Six deck winches are operated—four winches of a simple geared type with friction drum suitable for quick hoists of moderate loads as in coaling ship, and two winches of a compound geared type, permitting either the quick hoisting of light loads or heavy pulls at low speeds. The simple geared winches are especially designed for use as ammunition hoists to the military tops.

Four boat cranes are operated, the boats being hoisted and lowered and cranes rotated by power.

The ship is ventilated throughout, including the engine rooms, but excluding the fire rooms, by 13 ventilating fans, of which 10 supply and 3 exhaust air for the various water tight compartments.

The centering device on the hydraulic telemoter used to control the steam distribution valve of the steering engine as automatically operated.

The paper by W. I. Babcock dealt with the

System of Work in a Great Lake Shipyard.

This considered most exhaustively the practice of the Chicago Shipbuilding Company as applied to the ordinary lake bulk freight vessel of large size. The requirements of the service have developed a somewhat peculiar type of vessel. The great majority of modern steel lake vessels are designed to carry only iron ore, coal or grain in bulk, and no deck therefore is required or laid on the main deck beams in the cargo holds. The movement of ore and grain is entirely from upper to lower lake ports and of coal in the opposite direction. As, however, there are a great many wooden vessels still in service which require up cargoes and coal cannot be unloaded rapidly the freight rate on coal is seldom attractive, and the big steamers,

especially those belonging to the great ore and steel companies, go back light, using water ballast alone when any is required.

The season of navigation being limited by ice to about seven months in the year dispatch in port is of the utmost necessity, and as the cargoes are all spouted in, the ore and coal from elevated docks and the grain from elevators, and taken out by machinery on the docks, hatches are many in number and no hoisting machinery is carried on the ships themselves.

The connecting channels between the lakes being comparatively shallow, the vessels are built with a plate keel, very flat floor and full model to get as great capacity as possible on the limited draft available, and a large number of frames amidships are exactly alike, as many as one half to two-thirds the total number. When coming light to a loading dock they therefore float very high out of water, and to obtain the necessary slope to the spouts the hatches are made as wide as possible athwartships, leaving only stringer enough for strength on each side. While it is true that the upper deck could be depressed by filling the water bottom this would cause a loss of time in unloading, as it is evident that the cargo can be run in much faster than the water could be pumped out, and is therefore not allowable.

The longest straight run in open water is across Lake Superior, some 400 miles, the total voyage being under 1000 miles. Coal for fuel being available at various points in the connecting rivers no great bunker capacity is required, and the fuel hatches opening in all cases through the upper deck, a few minutes suffices to spout in the amount desired from elevated pockets. At lower lake ports it is usual while the cargo is discharging to fuel from a lighter alongside provided with a hoisting derrick reaching into the fuel hatch.

The paper then describes the building of a typical ship, the "Mauna Loa" of the Minnesota Steamship Company. She is 430 feet keel, 450 feet over all, 50 feet molded beam and 28½ feet molded depth, with a 5½ foot water bottom. She is propelled by a quadruple expansion, four crank, jet condensing engine of some 2500 horse-power, taking steam at 250 pounds pressure from two Babcock & Wilcox marine water tube boilers. The light load displacement is about 3200 net tons and on 18 feet 3 inch draft she carried 6816 gross tons of iron ore. The water ballast capacity is 2900 net tons. Speed loaded, 12 statute miles per hour, and light, 14 miles.

Each step in the construction of the ship, the methods followed and the appliances employed are minutely described. Many drawings and photographs accompany the text.

A paper by James Dickie described the

Overhead Cranes, Staging and Rivet Carrying Appliances in the Shipyard.

The need of some means whereby materials can be hoisted and deposited in any position on a vessel while building has long engaged the attention of the shipbuilder, and now that power riveting is coming greatly into use the demand for something overhead becomes imperative. Added to this is the staging necessary for the construction of the vessel, which is of itself a large item in the cost, while to this must be added the necessity of keeping the upper works fair while in the early stages of construction.

These four items form a large portion of the cost of the large merchantman or war vessel, either of the cruiser or battle ship type, and when we take into account the enormous beam of these large vessels we find that anything done must be on a large scale.

If then some kind of a structure that will facilitate the performance of these four functions can be made we have at least made one step toward cheapening the cost of the modern vessel.

Previous to 1884, so far as the writer knows, the only means used to hoist materials on a vessel while building was the derrick pole with the swinging gaff. Since that time several forms of cranes have been adopted.

1. We have the cantilever traveling crane, a good example of which is seen at Newport News. This crane has been so often described and illustrated that I not need do more than refer to it. It only performs one of the four functions sought—namely, the hoisting of materials; and as there is only one crane to two ships the writer cannot see how it can do all the hoisting for one vessel, no matter how fast it travels, seeing that the time of hoisting and traveling is such a small part of the work. We find that the average hoist takes about 40 seconds, traveling to the destination about 55 seconds, while it takes from 7 to 12 minutes to get sufficient bolts in a shell plate or beam to enable the crane to be let go. At the Union Iron Works we often have to run half an hour to an hour in the evening (with two cranes to one ship) to get all the materials in place.

2. The overhead crane or gantry so much used on the lakes, which travels all over the vessel, with rails on the ground on each side. As all the vessels on the lakes are built broadside to the water two cranes can be used to hoist the material for one vessel and simply moved to the end when the vessel is launched; but they can only do the hoisting.

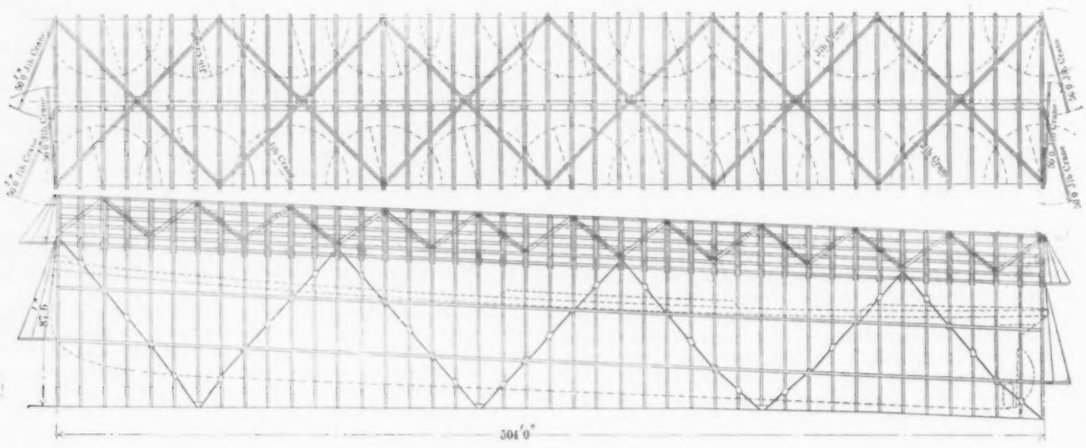


Fig. 3.—Steel Shipyard Building Slip.

3. The large gantry at Belfast, lately constructed and used in the building of the Oceanic. The writer has seen all the others in operation, but has not seen this one. It appears to perform two of the functions sought—namely, hoisting and carrying riveters; but, judging from the cuts of it, it must be somewhat limited in its operation, as it cannot cover more than 120 to 150 feet in length of the vessel at the same time, which appears to be insufficient, while such a large and heavy crane must be slow in its motion.

4. The framework which covers the entire vessel while building. Of this form we have two examples—namely, those at Swan & Hunter's on the Tyne and those at the Union Iron Works in San Francisco. As both of these perform the four functions, although slightly different in detail, a description of one will be sufficient. The writer having superintended the construction of those at the Union Iron Works is thoroughly familiar with all the details, and thought that the publication of them might be interesting to the members of this society.

No. 1 was built in 1884 of timber, as are all the others. It is 300 feet long, 48 feet wide, with an average hight of 55 feet, the top being built at an angle of 1 in 24, sloping toward the water. At the lower end is fitted a swing crane 35 feet long.

No. 2, built in 1887, is also 300 feet long, 85 feet wide and 58 feet high, with a swing crane 40 feet long at each end.

No. 3, built in 1891, is 300 feet long, 85 feet wide, 61 feet high, with a swing crane 45 feet long at each end.

SLIP AT UNION IRON WORKS.

Slip No. 4 is covered with a framework similar to the others, but larger; being 408 feet long, 85 feet wide, average hight 78 feet. The sizes of material are given in the accompanying drawings. It was at first intended to make the structure of steel, an outline drawing of which is shown in Fig. 3, but owing to the present high price and

scarcity of material it was decided to make it, like the others, of wood. As will be seen on the drawings there is a crane at each end 50 feet long, thus covering a vessel 500 feet long; and should longer vessels be built in it it can be easily lengthened, the hight being sufficient to cover the largest vessel. It will be noticed that the apex of the roof is 3 feet from the center, Fig. 4, making one crane 6 feet longer than the other. This is done to enable such pieces as beams, &c., to be landed on the center line.

The cranes are electric and travel at the rate of 180 feet per minute, fore and aft, 90 feet crosswise, and the hoist 90 feet per minute, with a lifting capacity of 5 tons. A manila rope is used for hoisting, which gives considerable elasticity and enables a plate to be bolted up if within 1 or 2 inches of the place.

For plating under the bottom and under the counter we use a wire rope, rove through the plate and the corresponding hole in the frame and toggled under the plate, which enables the plate to be drawn close up to its place.

We are also using the percussion air machine with a 4 or 6 foot gap, which weighs only about 250 pounds. As will be noticed the cranes for riveting are only 32 feet long, with a beam hung from them. This enables us to do hoisting and riveting at the same time, as all the material is hoisted up over the vessel and carried along near the center line to a point opposite to where it is to be landed. This center cross beam can be raised or lowered to suit the work on the vessel. When working on the inner bottom it will be down, as shown; when on deck it will be close up to the cranes.

ADVANTAGES.

We have studied all the various overhead cranes and claim for this structure that it is no more expensive in first cost and fulfills more functions than any other, except the one at Swan & Hunter's on the Tyne, and in comparison with it I think we have the advantage in staging. We find no disadvantage in having the posts as close

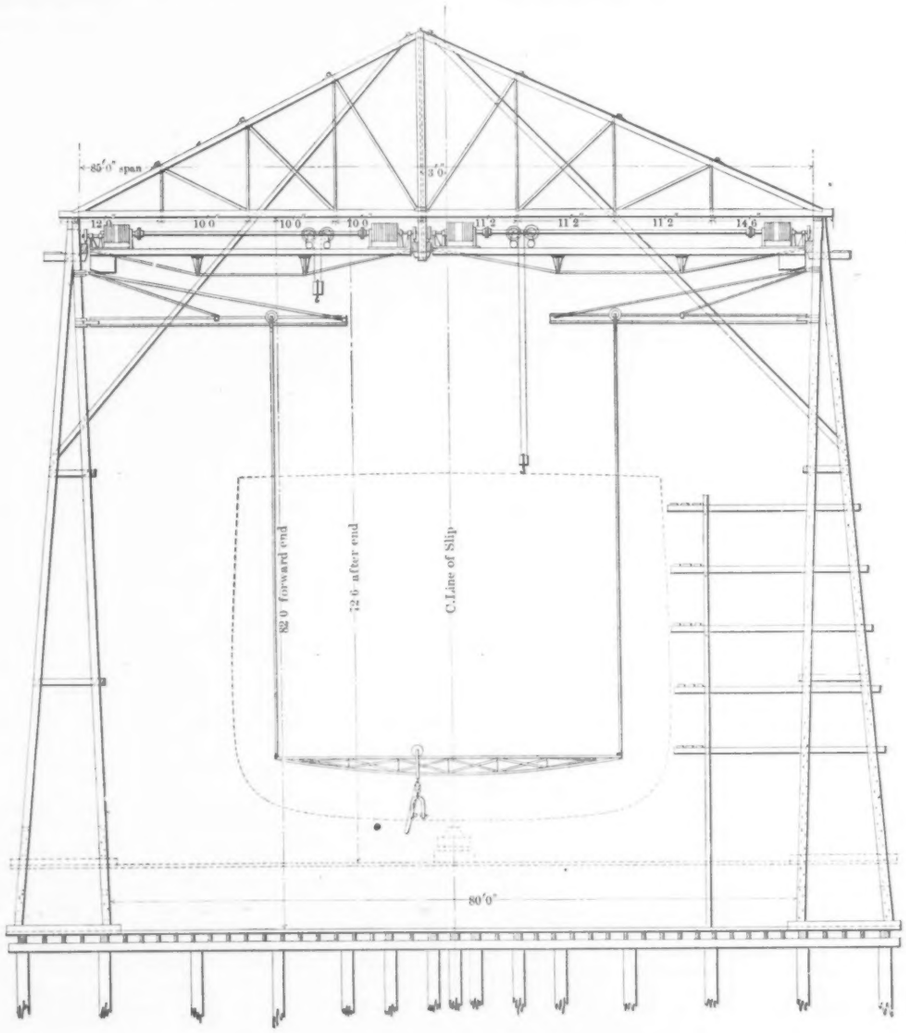


Fig. 4.—Shipyard Building Slip.—Overhead Crane and Staging Arrangements.

One feature of the structure is the facility with which staging can be erected. Where the ship is large the spauls, which are 4 x 8 inches, are rove through the main posts and held by loose bolts at the ends. Where the vessel is narrower a standard made of 3 x 6 inches double is set on top of the ground and held from canting by the rigidity of the spaul in the posts, thus saving all bracing. As the posts are all 12 feet centers we use 2 by 12 inches by 26 feet plank for staging, which we find strong enough for any work and light enough to be easily handled.

We propose in our new slips to fit up cranes for riveting, as shown in Fig. 3. These cranes are made of 8-inch T bulb beam and supported by two suspension rods. The trolley for the riveter runs on the lower flange of the beam; the wheels being 20 inches in diameter makes it very easily moved.

The machines we are at present using are the toggle jointed air machines, which drive ⅞ inch rivets with a 30-inch gap. The weight of the machine is about 1400 pounds. It moves so easily that the operator has no difficulty in making the nicest adjustment.

as 12 feet, all the hoisting being done at the upper end, then carried over the vessel to the required place and when there lowered into its proper place. As we use no side shores above the bilge the top sides are always clear for lowering a shell plate into position, and as I said before the bottom plates and plates under the counter are hoisted from the ground with a wire rope rove through the corresponding hole in the frame and toggled outside the plate. Thus the entire plating can be put on the vessel with these cranes.

It will also be noticed that we have two cranes at the upper end of the structure. These we use for frame riveting and all other pieces that can be riveted before going on board. As mentioned before, we use this structure to keep the upper works of the vessel fair while in the early stages.

For fairing the upper works we use turnbuckles from the sides of the vessel to the structure, and pull in or slack out when necessary. All of which is done by the men on the upper stage at small cost and with much convenience.

Other papers read during the convention were: "Sug-

gestions as to Improved Appliances for Launching Ships' Boats," by John Hyslop: "The Increasing Complications in War Ships and How Simpler Arrangements Might be Adopted," by Geo. W. Dickie; "Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with Some Results," by H. F. Norton; "Notes on Sheathing the U. S. S. 'Chesapeake,'" by Naval Constructor Lloyd Bankson; "Designs of the Denver Class of Sheathed Protected Cruisers," by Chief Constructor Philip Hichborn; "Novelties in Ship Fittings," by Assistant Naval Constuctor R. M. Watt; "Progressive Speed Trials of the U. S. S. 'Manning,'" by Prof. C. H. Peabody; "Tactical Considerations involved in Torpedo Boat Design," by Lieut. A. P. Niblack; "On the Action of the Rudder," by Prof. Wm. F. Durand.

The Association of American Steel Manufacturers and Committee No. 1 of the International Association for Testing Materials.

The Association of American Steel Manufacturers entertained Committee No. 1 of the American Section of the International Association for Testing Materials at a lunch at the Hotel Walton, Philadelphia, on November 17.

At the opening of the joint session which followed, the president, G. M. McCauley of the Central Iron & Steel Company, stated that the steel manufacturers, desiring to co-operate with the Committee of the International Association for Testing Materials in their task of framing standard American Specifications for Iron and Steel, had extended an invitation to Committee No. 1 to meet with the Steel Manufacturers' Association. The practical advantages of standard specifications are as readily recognized by the engineer as by the manufacturer, and the object of this joint meeting was to determine along what lines the manufacturers could best co-operate with Committee No. 1 to secure a speedy realization of the object so earnestly desired by all.

The testing departments of the steel companies, members of the Manufacturers' Association, could give Committe No. 1 the benefit of their wide and varied experience with different methods of testing, and it was only necessary to determine what doubtful or disputed points require adjustment to assure the practical co-operation of the manufacturers.

Mr. McCauley then called on W. R. Webster, chairman of Committee No. 1, who said in part:

"You are all more or less familiar with the work of the International Association for Testing Materials since 1882. The reports of their conventions at Munich, Dresden, Berlin and Vienna show that elaborate schemes were proposed for the introduction of standard methods of testing iron and steel and greater refinements in same.

"It was not until the Sixth Congress, in Stockholm, in 1897, that the matter of International Specifications was taken up. At that time there was a general discussion on the ways and means to be sought to introduce uniform specifications and methods of inspection of iron and steel of all kinds. The outcome of the discussion was the opinion that the result of the proposition was practicable and obtainable. This resulted in the formation of the International Committee No. 1, whose work is to establish international rules and specifications for testing and inspecting iron and steel.

"This committee originally consisted of about 40 members, of which five were assigned to this country, but under authority to increase its numbers the American sub-committee has been increased to 20, and is about evenly divided between manufacturers and engineers.

"We have started our work here on thoroughly practical lines by taking the specifications in use in this country for all grades of steel and dividing them into the following classes: 1, Bridge and ship materials; 2, building materials; 3, rails; 4, boiler materials; 5, axles, tires, &c.; 6, forgings; 7, castings; 8, wire.

"Our first object is to prepare Standard Representative Specifications based on the best American practice and specifications. In doing this we are not overlooking the importance of using uniform methods in testing, as the two go hand in hand.

"Considerable progress has already been made in this work; our specifications will be in print this winter. They will be sent to all of the steel campanies, our leading engineers and railroad companies, with requests for suggestions and criticism. This will put us in position to make our final report to the Amercan branch of the International Association at the annual meeting, next June, at which time we hope to have them adopted and put in general use in this country.

"The next step will be to send our specifications to all branches of the International Committee No. 1 in other countries with the request that they prepare similar Standard Specifications for each class of material. If this is done we will then have only a limited number of Standard Representative Specifications to consider at the next International Congress of this association in 1901 or 1902, at which time important disputed points can be taken up and decided on their merits, and there is every reason to believe that this will result in the adoption of International Standard Specifications, which would be of inestimable practical value to all countries.

"The time has arrived for steel manufacturers to discuss freely with engineers many points that have been carefully avoided. For instance, show that the physical properties of steel do not depend alone on its chemical composition, but that the heat treatment in rolling, forging and subsequent shop work is of just as much importance. Also show the true value of annealing, when and where it is to be used, &c. If this is done it will materially reduce the work of introducing more reasonable specifications here and abroad.

"In 1890 the French Government appointed a commission to report on the 'Methods for Testing the Materials of Construction.' This commission became identified with the International Association in 1895 at the Zurich Congress, and has since taken an active part.

"The French Government has invited the Internation Association for Testing Materials to participate in the Exposition Congress on Testing of Materials of Construction, to be held at Paris, July 9 to 16 next year. The Council at the meeting of September 25 in Dresden accepted the invitation, and recommended the members to present papers and take part in the discussions, it being understood that the Exposition Congress will refrain from adopting general resolutions on the subjects presented to it, and will legislate upon nothing.

"To take part in the deliberations of the Congress it is only necessary to pay a fee of $5, for which you receive a membership card, and copies of the transactions which the French Government will publish.

"This gives an excellent opportunity to present many of the points covered by our specifications and have them fully discussed. At the same time much stress can be put upon the importance of International Specifications. The ways and means of doing this might be taken up as a matter for discussion at that time."

H. H. Campbell, superintendent and general manager of the Pennsylvania Steel Company, moved on behalf of the Steel Manufacturers' Association that the thanks of the association be extended to Mr. Webster for his report reviewing the objects of Committee No. 1.

Mr. McCauley then stated that in the general question of including chemical requirements in the standard specifications he had understood from the chairman of Committee No. 1 that some members favored specifying a limit to the percentage of copper.

The Bethlehem Steel Company, one of the members of the Association of American Steel Manufacturers, made some elaborate experiments in 1897 on the influence of copper in steel which they had offered to present at this joint meeting, and he hoped that the evidence given would be duly weighed by Committee No. 1, when framing the chemical portion of their specifications.

Albert Ladd Colby, metallurgical engineer of the Bethlehem Stel Company, read a brief outline of their report. H. H. Campbell spoke of the many thousands of tons of high copper steel made by the Pennsylvania Steel Company, who had successfully entered into all branches of steel manufacture. He further said that he understood that *The Iron Age* had just made a very courteous offer to print Mr. Colby's report for the benefit of Committee No. 1 and others interested in this subject, and he would therefore move that this offer be accepted with the thanks of the steel association and of the members of Committee No. 1.

The subject of copper in steel was further discussed by P. E. Carhart, inspecting engineer of the Illinois Steel Company; H. V. Wille of the Baldwin Locomotive Works, James Christie of the Pencoyd Iron Works and A. E. Outerbridge of Wm. Sellers & Co., Incorporated.

A meeting of the Association of American Steel Manufacturers was called to order after the adjournment of the joint session. The present officers, G. M. McCauley, president; A. F. Huston, vice-president, and Albert Ladd Colby, secretary and treasurer, were re-elected for another year.

The secretary was instructed to bring to the attention of steel manufacturers, not members of the association, the question of co-operation between the manufacturers and members of Committee No. 1, and request them to join the association so as to co-operate in this work.

The practical value of the microscope to steel manufacturers was discussed.

The importance of having a representative of the steel manufacturers at the joint meeting of the Exposition Congress on Testing Materials and the International Association for Testing Materials, to be held at Paris, July 9-16, 1900, was discussed, and it was unanimously decided to send a representative, whose expenses will be paid by an assessment of the steel companies members of the association.

Lake Iron Ore Matters.

DULUTH, November 19, 1899.—Shipments are rapidly ceasing. The Oliver Company, on the Gogebic, for instance, have all their five mines now stock piling. They have about 100,000 tons left in stock, the result of high rates. The same company have stopped shipment off the Vermillion and will be through on the Mesaba in a few days. This week their Mountain Iron mine has been sending out ore as fast as at any time during the year.

The activity that has marked the mining industry the summer through will continue all winter, and more ore will be on stocks in the spring than ever before. The high water mark in employment will be maintained all winter. There are now about 3500 men working in the immediate vicinity of Ishpeming and nearly 1000 more around Negaunee, and these are assured of work for the winter. There will be about 2200 men in Vermillion range mines this winter, and what the Mesaba will lose will be absorbed elsewhere, especially on the Menominee, where the call for miners is exceedingly urgent. Many expert men who left that range a few years ago for South Africa are returning on account of war and idle mines, and are eagerly welcomed. Other things being equal, these men say they would stay in America for half the pay they have been getting in Johannesburg.

On the Gogebic range the Ashland has finally been unwatered. The Germania's No. 4 shaft is to be rebuilt, an indication that the mine will soon be as active as ever. Shipments for the past week have not been large.

On the Marquette range the old Brotherton, not to be confounded with the Sellwood Brotherton of the Gogebic, has been taken by the American Mining Company through Captain Sellwood. The mine has been idle for a generation.

The Imperial mine will be opened underground and worked this winter. The old shaft will be deepened and a second will be sunk. Efforts are making to reopen the Beaufort, close by, and it will probably become a producer next year. At the Michigamme mine a large force is getting things in readiness for active work. The company expect to crush ore here. East New York is about ready for hoisting, everything being in shape.

On the Vermillion range the Pioneer is about to sink an important new shaft, there being but one at the mine. This one handled 400,000 tons of ore the present year, exclusive of old stocks, and with two its shipments will be much increased. The Chandler mine has completed shipments, both from stock and shafts. It opened the season with a stock of 350,000 tons and one small and quite old shovel for loading it. This shovel has done a remarkable work during the season. Several new explorations have started on this range, mostly between Tower and Ely, in a section long known to contain ore, but neglected since the opening of the Mesaba. There are 15 exploration crews in one township here.

On the Vermillion and Mesaba ranges there are now at work not far from 50 diamond and churn drills, it is claimed. Of these Cole & McDonald, F. E. Sweeney and E. J. Longyear, contracting drillmen, have together 33 drills working, the Minnesota Iron Company have nearly 15 and isolated parties have several single drills. It will be no fault of these men if these ranges are not pretty thoroughly opened by another season. On the Mesaba several leases for properties have been made for lands in 58-18, near Mountain Iron, to the Consolidated Company.

Surface exploration is now under way in a district that has been neglected since the first days of the Mesaba, though iron has been known to exist there. This is the Sturgeon Lake region, lying some 15 miles north of Hibbing, on what is supposed to be a westerly outcropping of the Vermillion range, though it is more than 35 miles west of the Vermillion mines. Ore was mapped there by the State Geological Survey as far back as 1892. Outcroppings are said to resemble the Vermillion horizon quite closely.

Your correspondent has been shown some interesting ores in the past few days. One specimen, from what is said to be a large deposit, gives this result: Iron, 60 per cent.; phosphorus, *nil;* titanium, *nil;* oxide of zinc, 7.5 per cent. Also black blende and rosin blende running up to 64 per cent. zinc; galena running 70 per cent., with 7 ounces silver and a little gold; 68 and 69 per cent. specular hematite, and numerous other analyses from this region, most of them coming in quantity. There are reports of copper conglomerate on the north shore of Lake Superior, but the truth of these I doubt.

It is announced, on the authority of the contractors for the new Canadian road north of the Minnesota line, that the 45-mile link between the present westerly end of their line and the eastern end of the D. & I. R. road at Ely will be built over by them soon, to open that mineral region and to afford an opening to Duluth. If they send geologists through that region they will hardly be likely to build for the mineral yet, and if engineers make the trip they will find a pretty costly undertaking.

The Duluth & Iron Range, which is the Federal Steel Company, have won in a case where the State has contested their land grant, amounting to about 300,000 acres. The case has been on for two or three years, and nobody who has any knowledge of the situation has supposed for an instant that the State would win.

D. E. W.

The Milwaukee Foundrymen's Association.

This vigorous organization concluded to celebrate the advent of more prosperous times and accordingly arranged for a period of social enjoyment on the 16th inst. The notice sent out to members and invited guests is unique. After stating that the place of assemblage would be in the club room of the Plankinton House at 1.30 p.m., to proceed to the Theater Alhambra and witness a farce comedy, the notice proceeds as follows:

Here an *analysis* of the guests will be commenced by the members through *softening mixtures* composed of *business courtesies* extended, *pleasant entertaining methods*, &c., so that the *chill* that usually appears in a foundryman will be *reduced* to a *minimum* and *shrinkage* also will be overcome by the time that the *wind goes on* at 7 p.m. at the Plankinton House, where luncheon will be served, each *cupola* will be *lined, daubed* and *charged*. It is expected that time will not *drag*, that every *cope* will be *clear* for a discussion, that will have a strong *blast*, preventing a *dullness* in the flowing of suggestions. It is hoped that we will have little *slag*, so that when the *work* of the *day* is *poured off* and the *casting exposed* it will be found that it has not *strained* nor *shrunk* nor a *blow hole*, but is well *filled* at all *points, a clean pealed* piece of *work*, that when tested will show a *uniformity* of *action* among us, that will make our organization an *up-to-date* one, that will be a model, that foundrymen everywhere will desire to purchase the *shop right*. All foundrymen will be called upon to *give a lift*. There will be no *bedding in or rolling over*, as there will be no wine list.

Read the *Shop Rules*.

1. No sour beer used in your cores.
2. No rushing of the can.
3. No beer during working hours.
4. Smoking allowed.

All will remain until the flasks and molds are dumped. Whistle blows at 1 a.m.

Tap out——————First iron given to our President, C. A. Sercomb.

All to catch in as directed.

MILWAUKEE FOUNDRYMAN.

Paymaster, E. K. Rundle, who will foot all bills.

OFFICERS OF MILWAUKEE FOUNDRYMEN'S UNION NO. 1.

President, C. A. Sercomb, Schwab & Sercomb.
Vice-President, T. J. Neacy, Filer & Stowell Company.
Secretary, T. W. Sheriffs, Sheriffs Mfg. Company.
Treasurer, E. K. Rundle, Central Foundry Company.

BUSINESS AGENTS, RECEPTION COMMITTEE.

O. W. Greenslade of Greenslade Foundry Company, chairman.
Harry F. Bayley of Wm. Bayley & Sons, assistant of chairman.
Walter Read of Filer & Stowell Company.
C. A. Sammond of Stowell Mfg. & Foundry Company, South Milwaukee.
R. G. Wagner of J. G. Wagner Foundry Company.
Adam W. Bair, superintendent of foundry, Milwaukee Road.
Val. Nortmann of Stamm, Nortmann & Duffke.
Edwin Reynolds of the Edward P. Allis Company.
B. Hoffman of B. Hoffman Mfg. Company.
Chas. Hirsch of Hirsch Bros.
Henry Campbell of Gardiner Campbell & Sons.
H. W. Bolens of Gilson Mfg. Company, Port Washington.
W. J. Fairbairn of Western Malleable & Grey Iron Works.
P. E. Dutcher of Dutcher Foundry Company.
Ed. Reilly of Burnham Foundry Company.
Chas. F. Maynard of Crucible Steel Company.
J. C. Bradley of Milwaukee Stove Works.
Geo. Smith of Milwaukee Steel Casting Company.
W. S. Johnson of Johnson Electric Company.

An invitation to be present on this joyful occasion is hereby acknowledged, but unfortunately it was impossible to have a representative of *The Iron Age* present, which we regret. The Milwaukee foundrymen are doing practical work through their organization, which has long been needed in the foundry trade.

It is not true that the Carnegie Steel Company have purchased the Santanillo & Moroto Railroad, and the Ponupo manganese property near Santiago, Cuba. It is understood that the Pittsburgh concern have been willing to acquire the ore property, but did not want to take also the railroad, which is about 34 miles long.

THE WEEK.

In his forthcoming annual report to Congress, Secretary of Agriculture Wilson will ask for an appropriation to carry on a series of agricultural experiments in Cuba, Porto Rico, Hawaii and the Philippines, in order to determine their adaptability to certain natural products. Mr. Wilson believes that rubber can be produced in Porto Rico as well as in South or Central America.

The Penn Iron Works Company of Chester, Pa., have purchased all the old cannon balls and shells that have been piled up in pyramids at the Brooklyn Navy Yard for many years. This ammunition was manufactured for use in the Civil War, and lately it was decided by the authorities to sell it as old iron. Among the projectiles are about 9000 shells, varying from 8 to 15 inches in diameter.

It is estimated that 170,000,000 feet of lumber will be cut along the Penobscot River and its branches this winter, or 30,000,000 feet more than last year's cut. On the Kennebec the cut will, it is estimated, be nearly 200,000,000 feet. As a whole, the Maine lumber business is enjoying remarkable prosperity.

The report of the Naval Board of Inspection and Survey on the recent official test of the Holland submarine boat in Peconic Bay, L. I., states that after a thorough inspection of the plans and of the vessel, the board were impressed with the excellent condition of the boat and of all its appliances. They add that all the requirements of the Navy Department were fulfilled by the performance of the "Holland."

It is reported that a New York syndicate are negotiating to purchase the Dismal Swamp Canal of Virginia, recently rehabilitated and reopened by the Lake Drummond Canal & Water Company. It is understood that the locks at both ends of the canal are to be abandoned and the waterway widened sufficiently to permit the passage of larger vessels than those now using it. The Dismal Swamp Canal begins in Virginia on the south branch of the Elizabeth River, about 6 miles from Norfolk, and extends in a southerly direction about 20 miles to the Pasquotank River in North Carolina. The canal is one of a chain of inland waterways extending along the Atlantic Coast from Cape Cod, Mass., to Wilmington, N. C.

According to the Paris correspondent of the New York *Herald*, M. Santos-Dumont of that city seems to have solved the problem of steering balloons. He made an ascent last week in Paris, and first directed his course toward the Eiffel Tower, which he encircled, then turned off west, though a southwest wind was blowing at the time, and finally came down near the Moulin, at Bagatelle, in the Bois de Boulogne. His balloon is described as cigar shaped with a volume of 500 c. m. It is provided with a petroleum motor, for a screw at the stern, which only works when the balloon is going against the wind. All power in the motor is thus reserved for modifying the direction of the balloon in spite of aerial currents.

The anti-strike bill, which was introduced this week into the German Reichstag, was rejected by a substantial majority.

The first railroad ever constructed in the Republic of Ecuador is now being built there by a New York syndicate. It will run from Guayaquil to Quito. The journey between the two cities, which now takes nine days by muleback, will thus be reduced to a comparatively short space of time. Archer Harmon of Virginia has obtained the concession from the Ecuador Government.

The annual report of United States Commissioner of Navigation Chamberlain shows material progress in the American shipping industry during the fiscal year ended June 30, 1899, the returns disclosing more satisfactory conditions than those of any previous year in the history of the Navigation Bureau. The total documental tonnage on June 30, 1899, comprised 22,728 vessels of 4,864,238 gross tons, which is the largest since 1865. The tonnage operating under the coasting laws, 21,397 vessels of 4,015,992 gross tons, is the largest in our history and greater than the coasting tonnage of any other nation. The steam tonnage, 2,476,011 tons, for the first time exceeds the tonnage of all other craft. The tonnage registered for foreign trade, however, remains small, American vessels carrying last year a fraction less than 9 per cent. of our exports and imports.

A project is being pushed by a syndicate of Eastern capitalists for the construction of a canal from Grand Forks, N. D., to Duluth, Minn., with the object of connecting the wheat region of the Red River Valley with Lake Superior by water. The company organized to undertake the work will be styled the Great Northern Canal & Transportation Company. The route of the proposed canal will be from Red River to Red Lake, and thence to Lake Superior by way of a number of small lakes and the Mississippi River. Between 300 and 400 miles of cuttings will be made.

It is stated that Signor Marconi, who sailed for England last week and will proceed thence to South Africa, arranged, before his departure, to sell the rights to his wireless system of telegraphy in the United States to one of the leading American telegraph companies.

The question of storing flood waters for irrigation purposes, which is being generally discussed at this time throughout the West, has brought in so much correspondence to the United States Geological Survey that Frederick H. Newell, the hydrographer, has issued a circular setting forth what has been done in the way of Government surveys and the attitude of the Government toward the building of storage reservoirs. The circular says that a large number of reservoir sites in Western States have been surveyed and reserved, and that the maps and estimates of cost of construction have been compared and plans drawn, to afford an accurate basis for "appropriation for construction."

It is computed by the *Marine Review* that lake vessels capable of moving 17,798,000 gross tons of iron ore in 1900 are now controlled for next season by the ore and steel companies through ownership or extensive chartering.

It is reported from the City of Mexico, on what is said to be reliable authority, that General Porfirio Diaz has decided not to accept a re election to the presidency of Mexico General Diaz is credited with the desire to retire into private life, spending some time in foreign travel. Jose Ives Limantour, now Secretary of Finance in President Diaz's cabinet, is mentioned as his most probable successor.

The statistician of the United States Department of Agriculture in his preliminary report places the cotton crop of the country for the present season at less than 9,000,000 bales, with one of the smallest average yields per acre in many years.

Central Pennsylvania News.

HARRISBURG, November 20, 1899.—Unless the railroads find some way to relieve the coal famine soon many of the industrial plants in the district will be heavy losers through belated shipments and delayed orders. Pressing and important contracts are being carried out, and unless the fuel question is settled pretty soon there is going to be serious embarrassment. Last week the bar mill, two tin mills and the forge of the Lalance & Grosjean Mfg. Company were idle by reason of the coal famine. Only one tin mill and a sheet mill were in operation. This is a serious suspension, for the reason that the Woodhaven plant needs all the plate that can be turned out here running full time. At the close of the week a few carloads of coal were received from different sources, and the entire plant will be in operation this week. The same conditions exist at the Pennsylvania Steel Works and other industrial concerns.

The car service is so poor that not only is the coal supply short, causing the shutting down of busy and crowded departments, but it is impossible to make shipments promptly and satisfactorily. For instance, the Pennsylvania Steel Company were ready to make the final shipment of a mountain of structural material for the Burmah railway viaduct two weeks before the cars could be secured. Of course certain kinds of cars were needed, the train when it finally left the yards of the company being composed of 61 cars. Some of the cars in this train were fresh from the shops at Altoona, and were used for the first time. There still remains about 12 carloads for this India contract, and then all the material will be on the ground or in transit. More than 200 cars have been used in transporting this great mass of finished material to the seaboard.

All the departments of the Pennsylvania Steel Works are crowded with orders, particularly the bridge and construction department, the demand for structural steel being unprecedented. Inquiries continue to pour into the office of the company, and the outlook is very favorable for another year at least of this boundless activity.

The increase of wages at the Middletown plant of the American Tube & Iron Company last week affects 1500 men.

The Central Iron & Steel Company, the Paxton Iron & Steel Company, the Lochiel furnace and rolling mill and all the other plants in this territory are running full time, and all the iron masters of this section agree that the situation is most satisfactory. They expect higher prices in some cases, but are content, and a few would be satisfied to see iron drop a little, so that there may not be any postponement of contemplated enterprises because of high prices. S.

The Iron Age

New York, Thursday, November 23, 1899.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
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RICHARD R. WILLIAMS, - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

Why There Is a Plethoric Treasury.

The rather surprising question is asked in the circular letter of a banking house why the Treasury did not extend its relief to the market earlier, and why, in fact, it has so much money in its vaults. "If the Government has $30,000,000 above its legal requirements," asks the circular, "how is it that the amount was withheld so long? From what we know of the law all that the Government has a right to hold is $100,000,000 for the redemption of the outstanding greenbacks. All the rest belongs to the people from whom it was expressed in the shape of taxes of every description and should be returned to circulation."

It is not a little curious that the only fund in the Treasury here recognized as having a legal status is that which has the least legal status if it has any at all. The $100,000,000 reserve was for several years a mere matter of the discretion of the Secretary; subsequently it was recognized by statutes, but its legal authority is a mere matter of implication.

Since July 1, 1897—that is, in two fiscal years and a part of a third—the Government has paid out approximately $120,000,000 more than its revenues, so that the large surplus lying idle in the Treasury vaults can scarcely be regarded as the proceeds of taxation. It is rather the proceeds of loans. The Cleveland administration procured more gold for redemption purposes than it needed. We do not say that it sold more bonds than it should have sold; the fact that it acquired a very large amount of gold restored confidence and dissuaded from the presentation of notes for redemption. But it acquired more gold than it had to use. The present administration borrowed more money for the Spanish war than it needed; it borrowed much less than it was authorized to, but as the war ended very soon it could have got along with a smaller loan.

The "Independent Treasury" was created partly on account of a popular hostility to banks, which has not yet entirely disappeared, and partly because in the early part of the century there was a good deal of pretty bad banking. Under the "Independent Treasury" system all proceeds of loans and taxation had to be paid into the Treasury and held there till disbursed. The internal revenue was a later creation, and the proceeds of that form of taxation are allowed to be deposited in designated banks, if they wish the money and will secure it. But the customs and the proceeds of loans must be paid into the Treasury and must be there retained.

In previous years when there was a large surplus revenue the Secretary of the Treasury, under what amounted to an instruction from Congress, bought bonds to prevent an accumulation in the Treasury. But at present there is no surplus revenue to speak of; it has been only about $8,000,000 since the first of July. The purchase of bonds not yet due, therefore, was an extreme exercise of the Secretary's discretion, instead of a measure which was obligatory upon him months ago. There are bonds now due, but they are used to secure bank circulation, and the Secretary could not redeem them without diminishing the volume of bank notes.

A Serious Obstacle to Cash Terms.

The action of the National Hardware Association, at their recent Pittsburgh convention, in opposing the efforts of manufacturers to shorten terms of credit and abolish cash discounts, was not entirely unexpected. Nevertheless, the unanimity with which the jobbers took their stand in favor of the retention of the old terms was somewhat surprising. It had been supposed that considerable strength would develop in support of a similar step to that taken by some of the manufacturers, if for no other reason, to enable a larger measure of the present bountiful prosperity to be diverted to the credit of those who have so long complained of unsatisfactory margins of profit. But evidently the jobbers who favored the abolition of cash discounts perceived the current of sentiment running so strongly in the other direction that they thought it would be useless even to express their opinions. Representatives of manufacturing interests who were present by invitation made a good impression in stating the causes which had led to their abolition of cash discounts, but the jobbers were not convinced that their own special business could be conducted to advantage under such rigorous rules.

The jobbers' view of the cash discount, as shown by the resolution adopted at Pittsburgh, is that it is regarded as premium for prompt payment and should not be construed as bank interest. Manufacturers, however, claim that it must be considered as bank interest, and that any manufacturer or merchant allowing a discount for cash must originally add it to his cost price because his margin of profit is reduced by such an allowance. They further claim that a buyer's commercial soundness or business integrity can be ascertained in other ways which are fully as satisfactory as by his discounting his bills.

The National Hardware Association thus take a totally different view of the situation from that which is believed to be entertained by the majority of the jobbers of heavy hardware. Many of the latter are already working in harmony with the manufacturers and are insisting on net cash payments in 30 days. The heavy hardware jobbers are perhaps more closely in touch with this question, because such a large part of their trade is in products for which they must pay net cash in 30 days, whereas the shelf hardware jobbers handle a much more varied line, comprising many classes of goods still bought on the old terms. The necessity for shortening terms on their general trade is consequently not keenly apparent. The shelf hardware jobbers give good reasons for refusing to follow in the footsteps of those who have shortened terms, and perhaps they may persist in this course even if compelled to pay cash for many goods. They believe themselves governed by sound business principles in holding out to their customers the 2 per cent. inducement to pay cash in ten days.

Some manufacturers, notably those producing wire nails, wire and sheets, are endeavoring by direct appeals to their customers to have jobbing terms changed on their own special lines of goods, so that uniform customs may prevail all along the line. This, however, is asserted to be impracticable by jobbers, as it would involve their accounts, cause vastly more bookkeeping and considerably increase the expense of doing business. They can apply but one rule for their entire trade, which must be a cash discount for everything on a bill or net cash for everything. In this matter the persuasions will hardly be left altogether to the interests on one side, as it is believed that the jobbers through their association will endeavor to convince manufacturers that they are pursuing a wrong policy in the abolition of the cash dis-

count. If they are unsuccessful in this effort, but nevertheless resolutely continue to favor their own customers with the time honored allowance, they will obviously be justified in increasing the selling price of the goods sufficiently to cover the abatement thus conceded.

The statistics of the railway earnings compiled by the *Commercial and Financial Chronicle* show how the greatest single customer of the iron industry is being favorably affected by the general prosperity in this country. Our contemporary's figures bring out the fact that for the first nine months of the current year the gross earnings of 148 roads amounted to $800,814,909 as compared with $725,205,509 during the corresponding period of 1898, the increase in the latter year over 1897 for the same time having been $50,542,631, or together in two years over $125,000,000. At the rate at which the earnings of railroads have swollen so far this year they will be $200,000,000 more in the gross earnings and $80,000,000 in the net earnings. It is worthy of note that thus far this year the operating expenses have increased at the same rate as the earnings, so that there has been no skimping. We know that it is only lately that the rates for transportation of the railroads have increased, so that they promise to do even better in the near future, with the colossal traffic they are handling. That this augurs well for the iron industry it is unnecessary to emphasize.

CORRESPONDENCE.

The Open Hearth Process and New Steel Enterprises.

To the Editor: Mr. Kirchhoff's address before the metal section of the Manufacturers' Club of Philadelphia, which was published in full in *The Iron Age* of November 16, was read with a great deal of interest. As an evidence that he is correct in his statement that the new steel industries would adopt the open hearth method of making same, I will only point to the fact that all the new steel enterprises have this in contemplation, and among the most striking of the projects of this kind is that of the Page Woven Wire Fence Company, who already have a wire mill, and are now erecting a steel plant and rod mill at Monessen, Pa. This plant will consist of two open hearth furnaces, upon which basic or acid open hearth steel can be made, and it is so arranged that the ingots will be rolled direct into rods without cooling—no heating being required after the ingot comes out of the soaking pit. This is taking a step further in advance than ever before in connection with the rolling of the rods from the raw material, and, in fact, all who now contemplate going into the manufacture of steel feel that the ingot should be rolled direct to the finished material, in order to meet the competition that is sure to come sooner or later. This rolling of the ingot direct to finished material stands on a parallel with the taking of the metal direct from the blast furnace to the Bessemer converter. The open hearth plant of the Page Woven Wire Fence Company will be engineered by the Wellman-Seaver Engineering Company, and the blooming mill and rod mill plants by the Garrett-Cromwell Engineering Company. WM. GARRETT.

CLEVELAND, OHIO, November 18, 1899.

The Pressed Steel Car Company of Pittsburgh have closed contracts for 1800 steel cars. The Philadelphia & Reading have ordered 1000 wooden cars, with the pressed steel underframes, which will be built at the McKee's Rocks shops. The Pittsburgh, Bessemer & Lake Erie have ordered 400 steel cars of 80,000 pounds capacity, and 400 of 100,000 pounds capacity. The Illinois Central have ordered 500 pressed steel trucks for cars which they will build at their own shops at Burnsides, Ill. The 800 cars ordered by the Pittsburgh, Bessemer & Lake Erie Railroad will require 27,200,000 pounds of steel, and the cars for the Reading will require over 2,000,000 pounds. In addition to the above orders the company have all their works crowded with cars in course of construction for other roads. The new works at McKee's Rocks are a great relief to the old establishment in Lower Allegheny.

OBITUARY.

WILLIAM J. HITCHCOCK.

William J. Hitchcock, one of the pioneer ironmasters of Youngstown, Ohio, and president of the Andrews & Hitchcock Iron Company, operating blast furnaces at Hubbard, Ohio, died on November 18 at his home in Youngstown after a protracted illness, aged 70 years. Mr. Hitchcock went to Youngstown about 40 years ago and shortly after became associated with the late Chauncey Andrews in various enterprises, chiefly coal mining, iron making and railroad building. For some years past he had taken little active part in the great interests controlled by him. At the time of his death he was president of the Andrews & Hitchcock Iron Company, president of the Morris Hardware Company of Youngstown and director in a number of Youngstown banks and manufacturing concerns. He is survived by a widow and four children: Frank, secretary and treasurer of the Andrews & Hitchcock Iron Company; William, superintendent of the same; Mrs. George D. Wick, wife of the first vice-president of the Republic Iron & Steel Company, and Mrs. Myron I. Arms.

SIR WILLIAM DAWSON, LL.D., D.C.L.

The death, on November 19, at the age of 86 years, of Sir William Dawson, LL.D., D.C.L., late principal of McGill College, Montreal, Canada, removes one of the foremost scientific men of the English speaking world. Sir William's name is most closely bound up with the science of geology, of which he was one of the greatest exponents, but he was also famous in the whole field of natural sciences, including mineralogy, zoology and botany. He was born in Pictou, N. S., and studied in the University of Edinburgh, Scotland. Returning to Canada he devoted himself to the geology of Nova Scotia and New Brunswick. In 1855 he was made president and professor of natural history in McGill University, which position he filled for nearly 40 years. Sir William Dawson was the first president of the Royal Society of Canada, and in 1884 he was elected president of the British Association for the Advancement of Science. In 1893 he was chosen president of the American Geological Society. He was a prolific writer on geological subjects, and had been honored by many scientific bodies all over the world, including the degree of LL.D., conferred by Columbia University.

CHARLES F. WADSWORTH.

Charles F. Wadsworth, who died on November 13 at his home in York, N. Y., from heart disease, at the age of 64 years, was the first American who ever graduated from the School of Mines in Paris, France. After leaving that institution in 1859 he returned to the United States, and engaged in the iron business in Buffalo, N. Y. He served with distinction in the army during the Civil War, and subsequently settled near Geneseo, N. Y.

CHARLES H. KIMBALL.

Charles Harrice Kimball, aged 64 years, treasurer of the Dunbar Furnace Company, died at his home in Dunbar, Pa., on November 15. He was born at Warrentown, Ohio, and had been a resident of Dunbar for 25 years, during the whole of which period he was connected with the Dunbar Iron Company, which later became the Dunbar Furnace Company.

CHARLES KELLY.

Charles Kelly, secretary of the Kelly Foundry & Machine Company, Goshen, Ind., died at his home in that town on November 9, aged 46 years. Mr. Kelly was one of the founders of the company, and had been identified with them ever since their organization.

GENERAL THOMAS W. HYDE.

General Thomas W. Hyde of Bath, Maine, principal owner of the Bath Iron Works, and one of the best known shipbuilders of this country, died November 14, at the Hotel Chamberlin, Old Point Comfort, Va., as the result of an apoplectic seizure. He was born in Florence, Italy, in 1841, his parents being natives of Bath, Maine, where he was brought up. He was graduated from Bowdoin College and from Chicago University, and in 1861 enlisted for the Civil War as Captain in the Seventh Maine Regiment, seeing considerable service with the Army of the Potomac. He was granted a medal by Congress for exceptional bravery. After the war General Hyde returned to Bath with the rank of Brigadier-General of Volunteers, and leased the Bath Iron Foundry, employing seven men. This foundry later became known as the northern division of the Bath Iron Works, of which General Hyde became general manager in 1888, developing the enterprise to its present high position in the iron shipbuilding industry. In 1875 he was elected State Senator, and was twice re-elected. During his last two terms he

served as President of the Maine Senate. In 1878 and 1879 he was Mayor of Bath.

LEONARD AMES.

Leonard Ames, head of the Ames Iron Works of Oswego, N. Y., and for half a century one of the most prominent manufacturers of Northern New York, died at Oswego, November 10, in the eighty-first year of his age.

WILLIAM F. DURFEE,

William Franklin Durfee of New Bedford, Mass., an engineer and inventor of note, died on November 14 at the State Hospital, Middletown, N Y., in the sixty-seventh year of his age. He was born at New Bedford, and after a protracted mechanical training at home took a course at the Lawrence Scientific School of Harvard University, returning in 1853 to his native town, where he started in business as an engineer and architect. In 1862 Mr. Durfee went to Lake Superior to test the suitability of the iron ores for the manufacture of steel by a method invented by William Kelley. He succeeded in producing some ingots of steel, from which, on May 25, 1865, were rolled the first steel rails made in this country. He then established at Wyandotte, Mich., the first analytical laboratory built as an adjunct to steel works in the United States, for the purpose of studying the Bessemer process and the use of the regenerative furnace. During 1876 he was one of the jndges of machine tools for wood, iron and stone working at the Centennial Exposition in Philadelphia. He afterward built at Ansonia, Conn., the first furnace for refining copper by the use of gaseous fuel. In 1886 he became general manager of a company which controlled patents for the production of wrought iron and steel castings, and later was connected with the machinery plant at Birdsboro and with the C. W. Hunt Company of Staten Island.

JOHN SOISSON.

John Soisson, a member of the Joseph Soisson Fire Brick Company of Connellsville, Pa., expired at a hotel in Philadelphia on November 20, while on a visit to that city. Apoplexy was the cause of death. Mr. Soisson was 43 years old.

GEORGE F. E. HALMGREEN.

George F. E. Halmgreen, proprietor of the Alamo Iron Works, San Antonio, Texas, died on November 7, aged 77 years.

L. O. GARRETT.

Lee O. Garrett, manager of the Atlas Tack Company, Taunton, Mass., died of heart failure at his desk in Taunton about 2 p.m., Tuesday, Nov. 21. He was apparently in excellent health, having been present at the convention of the National Hardware Association, held in Pittsburgh last week, stopping at their New York house Saturday on his way back from the convention.

Heavy Advances on Iron and Steel Freights on January 1.

Taking effect January 1, 1900, rates of freight from Pittsburgh on pig iron, billets and cinder from all points both East and West will be materially advanced. The new rates effective on January 1 on pig iron, billets and cinder from Pittsburgh, and points taking Pittsburgh rates, to points named below, will be as follows:

From Pittsburgh and points taking Pittsburgh rates to	Pig iron.	Billets.	Cinder.
Chicago, Ill	$2.70	$3.00	$2.50
East St. Louis	3 30	3.60	3.10
Cincinnati, Ohio	2.10	2.30	1.90
Indianapolis, nd	2.35	2.55	2.15
Detroit, Mich.	2.10	2.15	1.90
Grand Rapids, Mich.	2.70	3 00	2.50
Dayton, Ohio.	2.05	2.20	1.85
Toledo, Ohio	1.70	1 85	1.50
Youngstown, Ohio	.90	1.00	.60
New Castle, Pa	.90	1.00	.60
Cleveland, Ohio	1.40	1 40	1.00
Buffalo, N. Y.	1.65	1.70	1.35
Ann Arbor, Mich.	2 25	2 65	2.05
Jackson, Mich	2.25	2 55	2.05
Kalamazoo, Mich.	2.70	2.90	2.50
Louisville Ky	2.70	3.00	2.50
Logansport, Ind.	2.60	2.80	2.40
Lima Ohio,	2.05	2.20	1.85
New Comerstown, Ohio.	1 10	1.20	.80
Boston, Mass	3.20	3.40	3.10
Burlington, Vt.	3.20	3 40	3.10
New York N. Y.	2 80	3.00	2.70
Richmond, Va.	2 80	3.00	2.70
Philadelphia, Pa.	2 40	2.60	2.30
Baltimore, Md	2 20	2.40	2.10
Albany, N. Y.	2 80	3.00	2.70
Utica, N. Y.	2 60	2.80	2 50
Susquehanna, Pa.	2.60	2 80	2.50
Syracuse and Elmira, N Y.	2.40	2.50	2.30
Binghamton, N. Y.	2.40	2 50	2.30
Rochester, N Y.	2.00	2.20	1.90

The Carlin Machinery & Supply Company.— The Carlin Machinery & Supply Company, John H. Carlin, proprietor, are located at 186 to 192 Lacock street, Allegheny, Pa. The concern will handle engines, boilers, pumps, contractors' machinery, grinding and mixing pans. The Carlin Machinery & Supply Company occupy the offices and warehouse occupied by Thomas Carlin's Sons, the latter concern having removed their offices to the works on River avenue, Allegheny. John H. Carlin has severed his connection with Thomas Carlin's Sons.

PERSONAL.

John Stevenson, Jr., of New Castle, Pa., has recently returned from British Columbia. He is again enjoying good health.

The candidates for office of the American Society of Mechanical Engineers for the coming year are Chas. H. Morgan of Worcester, Mass., president; Jesse M. Smith of New York, Stevenson Taylor of Hoboken, N. J., and David Townsend of Philadelphia, vice-presidents, and F. H. Boyer of Somerville, Mass.; John A. Brashear of Allegheny and Alfred H. Raynal of Washington, managers.

E. J. Barney has tendered his resignation of the Barney & Smith Car Mfg. Company of Dayton, Ohio, to take effect from January 1.

Wharton McKnight has been appointed representative for the Pittsburgh district of the Vulcan Foundry & Machine Company at New Kensington, Pa.

Chas. T. Schoen, president of the Pressed Steel Car Company of Pittsburgh, will sail for Europe on Saturday, November 25. It is stated that Mr. Schoen's visit to England is for the purpose of closing up a deal with an English syndicate for the purchase of the Schoen steel car patents that are held in Great Britain and the various countries of Europe. The deal has been pending for some time, and negotiations gave rise to the report that the Pressed Steel Car Company contemplated the erection of a car plant in Europe, but this is denied. It is claimed the English syndicate have already arranged for the use of pressed steel cars on several European railroads, and pending the building of a foreign plant the cars may be supplied from the works of the Pressed Steel Car Company in this country.

Frederick Bishop of Youngstown, Ohio, has succeeded George H. Lowe as superintendent of the rolling mill department of the Southern Car & Foundry Company, at Anniston, Ala.

Professor Andre Ivanoff of the Imperial Mining Academy of St. Petersburg, Russia, is now in this country inpecting some of the large steel works with a view of gathering information that will be useful in the introduction of new methods in Russian steel works.

C. H. Wheeler, president of the Wheeler Condenser & Engineering Company of New York, has gone to England on a business trip.

John A. Kernan has been elected director and secretary of the Utica Pipe Foundry Company, Utica, N. Y.

A. J. Moxham has consented to take full charge of the building of the new plant of the Dominion Steel Company, at Sydney, Nova Scotia. This is the enterprise recently started by the Whitney syndicate of Boston. Mr. Moxham was the creator of the plants of the Johnson Company at Johnstown, Pa., and of the Lorain Steel Company at Lorain, Ohio, and retired from business when these interests entered the Federal Steel Company.

H. A. Marting is one of the incorporators of the Columbus Iron & Steel Company of Columbus, Ohio, who are to build a blast furnace at that point.

L. K. Shellaberger has been appointed manager of the Kansas Steel & Wire Company, Waverly, Kan. The office of the company is at 304 Delaware street, Kansas City, Mo.

C. Lueg of Duesseldorf, Germany, is now in this country.

L. Vogelstein, American representative of Aron Hirsch & Sohn of Halberstadt, Germany, sailed on the "Majestic" yesterday for Europe. He will remain abroad about two months.

The Massey Vise Company, 30 and 32 South Canal street, Chicago, are calling special attention to a vise which they have lately placed on the market for use on planers, milling machines and drill presses. It has beveled jaws, held in place laterally by screws and coil springs. The beveled jaws travel downward. The work when chucked travels with the beveled jaws and is forced down hard on the bed of the vise. The advantage of this is that anything planed, milled or drilled may be depended upon to be true to its under surface. Any work of irregular shape can be chucked accurately. This and other styles of vises, forming an extensive line, are shown in a recently issued catalogue.

Willis L. King on the Outlook.

In a recent interview with a representative of a Pittsburgh daily newspaper, Willis L. King, manager of Jones & Laughlins, Limited, is credited with making the following statements:

"I do not think that Mr. Carnegie is any too sanguine in his view of the iron and steel trade future. The present condition of affairs is regarded by some as a boom, but an examination of all the circumstances will show any one that the coming year will likely be better than the one now closing. The demand for iron and steel products of all kinds is extremely large, and what is better, it is steady. The immense sales of steel rails and track material lately indicate what may be expected in railroad construction during the coming year, and this is the great basis of prosperity in the iron and steel trade. In the structural steel trade the outlook was never so bright. There is every sign of an immense amount of steel construction that will go up next year.

"The high prices which have prevailed for the past six months have not apparently lessened the demand for steel building material. The machine building establishments throughout the country are filled with work, and new manufacturing plants on every hand are being delayed because they cannot get machinery equipment. As each line becomes pushed with work new extensions are planned, but these are being kept back by the want of machinery and manufacturing supplies.

"The makers of agricultural machinery are closing the largest year's work they have ever turned out, yet they are looking for a larger total in 1900. There has been some comment on the estimates made of the increased pig iron production during the coming year. Some who have footed up the blast furnace work now going on, and in prospect, show that the new furnaces will increase the country's output 5,000,000 tons. This should cause no apprehension, as the increased tonnage will be disposed of easily.

"Even in case of a protracted lull in the home trade we have the foreign market to further cultivate, and it should be remembered that each year makes American iron and steel products more necessary to foreign consumers. I am not ready to say that the coming year will keep iron and steel prices at their present level, but I firmly believe that there will be no material drop, and that good paying rates will be sustained."

The New Standard Steel Classifications.—In the standard steel classifications adopted November 10, 1899, and printed on page 31 of *The Iron Age* of November 16, it was stated that the National Steel Company had adopted these classifications. This is an error, as that concern do not roll finished products. A complete list of concerns who have adopted these standard classifications is as follows: American Steel Hoop Company, Pittsburgh; Burgess Iron & Steel Company, Portsmouth, Ohio; La Belle Steel Company, Pittsburgh, Pa.; Oliver Iron & Steel Company, Pittsburgh; Union Rolling Mill Company, Cleveland, Ohio; Zug & Co., Limited, Pittsburgh, Pa.; Jones & Laughlins, Limited, Pittsburgh, Pa.; Ætna-Standard Iron & Steel Company, Bridgeport, Ohio; Gautier Department, Cambria Steel Company, Johnstown, Pa.; Illinois Steel Company, Chicago, Ill.; Republic Iron & Steel Company, Chicago, Ill.; Park Steel Company, Pittsburgh, Pa.; Lockhart Iron & Steel Company, Pittsburgh, Pa., and Pittsburgh Forge & Iron Company, Pittsburgh, Pa.

Great Records at Duquesne.—Some great records for production of Bessemer pig iron and steel were made last month by No. 4 Furnace at Duquesne, and also in the converting department and rolling mill of the Duquesne Steel Works. The product of No. 4 Duquesne blast furnace for October was 19,630 tons, the average per day being 633 tons. In the converting department the product of No. 2 on November 14 was 123 blows and 1181 tons of ingots. In the rolling mill No. 2 turn on November 14 made 125 heats and 1061 tons, the finished product consisting of sheet bars, 4 and 1½-inch square billets. This beats all previous records.

The Naval Arch in New York.—J. Mitchell Clark of Naylor & Co., Henry H. Hendricks of Hendricks Brothers, J. Langeloth, president of the American Metal Company, Leonard Lewisohn of Lewisohn Brothers, and Stuyvesant Wainwright have been appointed a committee to secure subscriptions from the metal trade for the permanent construction of the Dewey Arch in New York. Checks are payable to the order of J. Edward Simmons, treasurer of the Citizens' Committee for Perpetuating the Dewey Arch.

The Metal Mixer Patent.

Chief Justice Melville E. Fuller of the United States Supreme Court has granted the petition of the Carnegie Steel Company, Limited, for a writ of certiorari to the United States Court of Appeals in the long contested case against the Cambria Iron Company for alleged infringement of the patent rights of the Carnegie Company to the process of steel making employing the metal mixer. The process is used by almost every large steel manufacturing concern in the world, and a victory for the Carnegie Company in the Supreme Court will mean the payment of immense royalties to the Carnegie Company. The report, from apparently authentic sources, made on November 7, that the Supreme Court had denied the Carnegie Company's petition, was accepted by the steel trade, and the announcement that it had been granted instead of denied was a surprise. The granting of the petition is another victory for the Carnegie Company, the first decision in their favor having been given by the United States Circuit Court of Western Pennsylvania. The case will now be finally disposed of by the Supreme Court.

The question at issue is whether the patents issued to the late Capt. William R. Jones for a method of mixing steel are valid. The United States Circuit Court held that the Jones process was patentable; was not anticipated by prior efforts to the same end; that it was of vast utility and public importance, as it quickened and cheapened the production of steel, and that the Cambria Iron Company infringed. The Circuit Court of Appeals reversed this decision last August.

The Carriage Spring and Axle Consolidation.—The consolidation of the carriage spring and axle concerns in the country, referred to in these columns before, is nearing completion and application will be made for a New Jersey charter in a few days. The consolidation is intended to include nearly 40 concerns, controlling about 85 per cent. of the carriage spring and axle trade of the United States. Options have been secured on three plants in Pittsburgh, these being the Pittsburgh Spring Company in Pittsburgh, the Dexter Spring & Gear Company at Hulton, Pa., and the Liggett Spring & Axle Company of Allegheny, in which Wm. G. Park of the Park Steel Company is the principal owner. The new concern will be known as the American Spring & Axle Company and will issue $6,000,000 in capital stock and $6,500,000 in bonds. It is claimed that this combine will differ from any other industrial combination in the fact that real values are represented in the securities to be issued and that the stock will not be classified. A. Leo Weil, an attorney of Pittsburgh, and B. I. Greenebaum of Chicago are the principal promoters. Nathan C. Wilson, consulting engineer, with offices in the Carnegie Building, Pittsburgh, made the appraisals of the properties.

The Scranton Bolt & Nut Company.—The Scranton Bolt & Nut Company of Scranton, Pa., were incorporated on May 17, 1899, and on June 1 ground was broken for the erection of the buildings. It is expected that bar iron will be rolled on the 25th and that the plant will be in operation by December 1, so that shipments will be begun early in that month. The works consist of a puddle mill, a 12 inch finishing mill and a full complement of bolt, nut and spike machinery for the production of 12,000 tons per annum The product will be bar iron, machine, carriage and track bolts, lag and coach screws, bridge rivets, bridge rods, tie rods, washers, track spikes, washers and hot pressed square and hexagon nuts.

The Zwoyer Fuel Company were incorporated this week under New Jersey laws, with a capital of $100,000, to manufacture fuel from coal dust, &c. The incorporators are Nelson C. Thrall, Silas J. Atwater and Wm. P. Taggart.

The Londonderry Iron Company, Limited, of Londonderry, N. S., have been sold to H. S. Halt of that city for $153,000. The deal includes the blast furnaces, rolling mill, foundries, railway, &c., with the machinery plant as well as the Maccan (N. S.) colliery, consisting of 4 square miles. Extensive improvements are to be made on all this property at an early date.

The big North German Lloyd steamship "Kaiser Wilhelm der Grosse," which arrived at New York on Tuesday, made a fresh record across the Atlantic, shortening the time from Cherbourg to Sandy Hook to 5 days, 17 hours and 27 minutes. Her average speed for the trip was 22.19 knots an hour.

Trade Publications.

Punching and Cutting Machine for Structural Iron.—A circular by Henry Pels & Co., 66 and 68 Broad street, New York, describes the Werner patent portable machines for punching and cutting by hand, beams, channels, angles, &c. This machine is adapted for punching shapes, no matter whether with parallel or diverging surfaces. The machine is powerful enough for the heaviest work, and is so designed that its maximum capacity can be easily developed by two or three men. It is mounted upon wheels so as to be readily portable.

Industrial Railroads, Cars and Steel Barrows.— We have received from the Atlas Bolt & Screw Company of Cleveland, Ohio, a catalogue dealing with their car department. This describes their steel cars, which are made in a wide line of patterns. Their side dump steel car is built to stand the roughest usage. It is made entirely of steel, the body being constructed of ¼ and 5-16 inch plate, reinforced along the bottom with heavy 3-inch steel angles. The ends are fastened to the sides by angles, the top edge is also protected by steel angle riveted, which adds greatly to the rigidity of the sides. The body of the car is hung on steel trunnions resting on steel supports well ribbed and braced. The frame work is made of heavy channel steel. The wheels run in self oiling boxes in bronze bearings. The car tips at such an angle as to insure a clean dump. Their portable track is made in different widths of rail, in straight and curved sections of 15, 20 and 30 foot lengths. The rails are fastened to channel shaped ties by clamps and bolts, and in the case of concrete and hard floors flat ties are used. The curved sections are made to any required radius. Many different patterns of steel tubular barrows are described.

Radial Water Tube Boiler.—We have received from Egbert P. Watson, 181 Madison avenue, Elizabeth, N. J., a catalogue descriptive of his radial water tube boiler for marine and stationary purposes. This boiler commends itself to steam users by reason of its simplicity of design, perfect circulation, accessibility for cleaning and repair, compactness, lightness and strength. It is constructed wholly of steel plate and steel tubes, and is therefore free from strains caused by metals with variable ratios of expansion. The tube system is in the form of a cone inclined over a central furnace, and the gases and heat from which are diverted between the tubes by a baffle plate in the upper part directly under the smoke tube. The tubes are fastened by expanding them in the tube sheets. The tube sheets are inclined so that the tubes are at right angles with them. The tubes are made of solid drawn steel, and both tube sheets and dome are marine steel of 60,000 pounds tensile strength. Easy access is had to the grates, which are put in through the furnace door, and the ash pit, which is also steel, is readily cleaned out with a fire hoe. The boiler has perfect natural circulation from the moment the fire is started. Muddy water can be used in this boiler without injury to it, from the fact that its circulation sweeps everything down the outside tubes, which end in the water bottom, thereby allowing all sediment to collect there, from whence it is easily blown out. This boiler has been approved by the Steamboat Inspection Service, and is on the list of authorized boilers.

A Trade Index.—Under the title of "Indice del Comercio Americano" the National Association of Manufacturers has published a Spanish edition of the book which appeared under the name of "American Trade Index" in January last. The present issue is a book of 425 pages and follows exactly the plan and arrangement of the English volume. The first section of the book contains an alphabetical list of the members of the association, about 1100 in number, which gives in each case an enumeration of the principal articles manufactured by each concern, especially those products designed for foreign trade. Other necessary information about the manner in which foreign business is transacted by each member. the location of foreign agencies, the registered cable address and the cable codes are given in the same paragraph. The second section of the volume contains the same names classified under various headings, so that a buyer who wishes to purchase steam engines or castings or agricultural implements or machine tools, or any other of about 1800 articles can see at a glance the name of reputable manufacturers who produce the desired articles. The third section contains in alphabetical order the registered cable addresses of the members of the association. The book is interleaved throughout with detachable blanks, which can be used for inquiries for any articles which are not mentioned in its pages.

MANUFACTURING.

Iron and Steel.

The Atlantic Tube Company of Pittsburgh have almost completed the building of their new tube mill at Beaver Falls, Pa. This concern were chartered last April, and on Saturday, November 18, made application at Trenton, N. J., for an increase of their authorized capital stock to $750,000. The company were chartered with a capital stock of $250,000, and it is understood that the increase of capital is to be expended for additional buildings and equipment.

On Monday, November 20, a very large force of men was put at work making excavations for the foundations for the new basic open hearth steel plant of 14 50-ton furnaces to be built at the Duquesne Steel Works of the Carnegie Steel Company, Limited, at Duquesne, Pa. Electric lights have been placed about the site and work will be pushed vigorously night and day.

The Philadelphia Forge Company, with principal office 76 Montgomery street, Jersey City, N. J., have been incorporated for the manufacture of steel and iron, with a capital of $50,000. The incorporators are Dudley G. Gautier, Wm. C. Pearson and Henry A. Bugie.

The Griswold Wire Company, at Braddock, Pa., manufacturers of steel wire, bale ties and other wire specialties, will make some additions to their plant which will largely increase their capacity.

One of the hot blast furnaces at Charlotte Furnace, Scottdale, Pa., has been completed and the iron work of the second stove is now being constructed. The stoves will be 75 feet high and 20 feet in diameter. David Lamond, consulting engineer, Ferguson Block, Pittsburgh, is in charge of the work.

The Midland Rolling Mill Company of Chicago, Ill., manufacturers of flats and rounds, and of steel angle bars for iron or brass bedsteads and for iron frame woven wire mattresses, have just about completed the rebuilding of their mill, which was destroyed by fire in the early part of this year, and have added greatly to their capacity, their new mill being of the most modern construction throughout, the main building and machine shop being of brick, iron and steel construction. This company have also purchased the business of the Garden City Wire & Spring Company.

The Royal Steel & Iron Company have been incorporated, with office at Portland, Maine, and authorized capital stock $5,000,000. The incorporators are H. D. Sawyer, C. E. Billings, W. A. Collins, all of Boston; C. G. Macintire, G. M. Smith of Maplewood, Mass.

Machinery.

The Buckeye Engine Company of Salem, Ohio, through their Pittsburgh office, have recently taken the following orders: A 17½ x 18 inch, 225 horse-power engine, to the Carbon Steel Company, Pittsburgh; a 12 x 24 inch, 80 horse-power engine, to M. Lanz & Sons, South Side, Pittsbzurgh; an 18¾ x 21 inch, 250 horse-power engine, to the Brier Hill Coal & Coke Company of Fairmont, W. Va.; two 18¾ x 18 inch 250 horse-power engines, to the Monongah Coal & Coke Company, Monongah, W. Va.; three tandem compound condensing engines, 18¾ x 32½ x 36 inches, 500 horse-power, to the Carnegie Steel Company, Limited, for their Carrie Furnaces, at Rankin, Pa., and two tandem compound condensing engines, 20 x 36 x 36 inches, 650 horse-power, to the Carnegie Steel Company, Limited, for the Duquesne steel plant.

Wm. J. Carlin, operating Thomas Carlin's Sons, founders, machinists and boiler makers, of Allegheny, Pa., has purchased a plot fronting 125 feet on River avenue adjoining the River avenue plant of the firm, by 100 feet in depth. The new site will be used for extensive additions to the present shops. It will be recalled that Wm. J. Carlin recently purchased the entire business of Thomas Carlin's Sons. It is stated that a steel building to cost about $70,000 will be erected on the site.

The Westinghouse Machine Company of East Pittsburgh have recently received orders for the largest engines ever used for electrical station work. The New York Gas & Electric Light, Heat & Power Company have ordered eight for their New York plant and four for their Brooklyn plant. In both cases the generators are placed centrally in the engine frame. The Brooklyn engines are rated at 4500 horse-power, with a required maximum of 6600 horse-power. They will have an ultimate ability of 7200 horse-power. The New York engines will be about 6200 horse-power, working up to 8000 horse-power and able to go over 9000 horse-power.

A company have been organized at Franklin, Pa., to manufacture pneumatic tools, air compressors and general mining machinery. Messrs. Miller and Sibley are at the head of the company, who will give employment to a large number of men.

The Pennsylvania Engineering works of New Castle, Pa., have been granted a charter with a capital stock of $150,000. The directors are Edward King, Geo. Greer, Wm. Patterson, Edwin N. Ohl and James W. Reis, all of New Castle, Pa. It will be recalled that this concern have taken over the plant of the New Castle Engineering Works, at New Castle, Pa.

The F. J. Richard Machine Company, Limited, Bloomsburg, Pa., have shipped to the Industrial Tube Company of Chicago

the entire plant for their steel tube works in that city, which it is expected will be in operation within the next 30 days.

The Pratt Chuck Company of Frankfort, N. Y., report such a large demand for their product that they have not only found it necessary largely to increase their force, but are rebuilding and making additions to their plant in order to meet these demands. They report a large correspondence from abroad making inquiry regarding their chucks, a foreign order recently received being from one of the large shipbuilding firms on the Clyde.

The Globe Iron Works, Memphis, Tenn., have been incorporated with a capital of $50,000 for manufacturing and dealing in engines, boilers, &c. The incorporators are J. Lee, Jr., W. T. Ahrens, W. R. Rodgers and others.

The American Bell & Foundry Company have been organized at Northville, Mich., with a capital of $15,000, to manufacture bells, make general castings and operate a machine shop. F. S. Harmon is president, Charles Filkins vice-president, L. A. Beal secretary, and E. H. Lapham treasurer. They have secured a plant adapted to their business and begin work at once.

J. L. Hamlin and J. B. Griswold have purchased and will operate the Union Foundry & Machine Works, at Bradley, near Kankakee, Ill.

Fleming & Sons, Huntsville, Mo., are building a foundry as an addition to their factory for making rakes and stackers, and will hereafter make their own castings.

The foundry of the Lakeside Iron Works, Muskegon, Mich., was burned last week.

At the recent annual stockholders' meeting of the Oriskany Malleable Iron Company, Oriskany, N. Y., the following officers were elected for the ensuing year: President, John B. Whitten; vice-president, Samuel Nelson; secretary, treasurer and superintendent, George H. Graham.

Hardware.

The Lynchburg Hardware Mfg. Company, Lynchburg, Va., are advancing the arrangements for the active operation of their plant as speedily as possible, and at present a large force is employed in placing the shafting and machinery in position. Thirty carloads of material, including machinery, locks, &c., have been brought to Lynchburg from Roanoke, the plant of the Norwich Lock Mfg. Company at the latter place having been purchased at an advantageous figure. The main building of the new plant consists of two wings, one of which is 180 x 50 feet and the other 150 x 50 feet. It has two stories, the upper one of which has not a single pillar or post, and the floor of which is unusually heavy, consisting of a double layer of heavy timber. Other buildings are an iron foundry, 50 x 100 feet; engine room, japanning department, &c., 30 x 100 feet; brass foundry, 50 x 50 feet, and pattern vault, 20 x 30 feet. Running at full capacity the plant, we are advised, will give employment to nearly 300 men. A full line of builders' hardware will be manufactured. The officers of the company are H. E. McWane, president; Wm. Hurt, vice-president; H. L. Campbell, secretary and treasurer, and Charles M. Burgess, general manager. Mr. Burgess has for the past 33 years been connected with the Russell & Erwin Mfg. Company, New Britain, Conn., and is referred to as specially qualified for the position to which he has been appointed.

Frank Mossberg Company will occupy their new factory at Attleboro before December 1. It will be completely equipped for the manufacture of bicycle bells and metal specialties, punches, dies and special machinery, and the company will do punching and stamping under contract. The new building has 23,000 feet of floor space and is three stories high. This company now have the exclusive agency for the sale of the well-known Mossberg wrench, and the business is under the management of Frank Mossberg, who is well and favorably known to the trade.

A newly patented self heating flat iron will be manufactured by the Gem Flat Iron Company, just organized at Kalamazoo, Mich., with a capital stock of $25,000. The officers are William F. Bixby, president; F. H. Lindsley, vice-president; Calvin Forbes, secretary; E. R. Burrell, treasurer, and Charles Gleason, general manager.

Miscellaneous.

The works of the Fort Pitt Bronze Company of Preble avenue, Allegheny, have been absorbed by the Magnus Metal Company of Jersey City, N. J. The Magnus Metal Company were recently organized under the laws of New Jersey, with a capital stock of $1,200,000, and have taken over the following concerns: Hewitt Mfg. Company of Chicago; Brady Metal Company of Jersey City; Buffalo Brass Company of Buffalo, N. Y.; Stiles Metal Company of New Haven, Conn., and Fort Pitt Bronze Company of Allegheny. Lang Hukill has been elected manager for the Pittsburgh District.

The Day-Ward Company, Warren, Ohio, manufacturers of bath tubs, have decided to make some extensive additions to their plant, the exact nature of which have not as yet been determined.

The Century Fence Post Company of Pendleton, Ind., have filed articles of incorporation. The capital stock of the company is $50,000, and the directors are J. R. Brunt, W. N. Heath, R. C. Glassco, George A. Phipps and T. M. Hardy.

The Clifford Pipe Wrench Company, at Kittery, Maine, have been organized for the purpose of acquiring the Clifford patents and manufacturing pipe wrenches, with $100,000 capital stock. The officers are: President, James S. Wilson; treasurer, C. W. Wilson, both of Chelsea, Mass.

At the quarterly meeting of the directors of the Barney & Smith Car Company, held in Dayton, Ohio, on November 14, the resignation of E. J. Barney, president of the company, was announced, to take effect on January 1 next.

The Up-to-Date Mfg. Company have nearly completed a factory at Terre Haute, Ind., to manufacture iron ornamental and farm fencing, window guards, railing, gates, &c. Their building is of brick, 40 x 144 feet, two stories high, and is being equipped with modern machinery, much of it made specially for the work to be done. The business will be managed by J. H. Srofe, formerly president of the Kokomo Fence Machine Company.

The Heckert-Baltzley Billet Company, Toledo, Ohio, are the style of a newly incorporated company organized for the purpose of manufacturing seamless steel tubing, pneumatic, hydraulic mechanical engineering and high pressure boiler tubes, of which Mr. W. C. Brewer, formerly with the Shelby Steel Tube Company, is general manager. The product of the company will be in rounds and squares, also round and square billets manufactured by the open hearth basic process, in sizes from 1 inch in diameter to 13, inclusive. They expect to have their mills in operation for manufacturing large sizes up to 8⅝, inclusive, on or before January 1, 1900, and up to 13 inches by March 1. The company start with ample financial backing and excellent facilities for production.

Improvements by the Republic Iron & Steel Company.

The Republic Iron & Steel Company are making many improvements at their various plants. Nearly every district manager is trying to develop the highest efficiency of the several works under his control with a view to increasing the output and securing greater economy in the cost of production. The plans outlined by them have been taken up by the directors of the company, and many of the suggestions are being carried out. This results in considerable overhauling of the various properties, including the rebuilding of puddling and heating furnaces and improvements of engines and minor details which in the aggregate involve considerable work, and will put everything in much better condition.

At Youngstown, Ohio, the most important improvement now under way is the erection of a Bessemer steel plant, which will be equipped with two 5-ton converters and will have a very complete blooming mill. It is expected that this plant will be ready for operation early in the coming year.

Contracts have been let for an additional 20-ton open hearth basic steel furnace at Minneapolis. This will give the company three open hearth furnaces at the Minneapolis works. An electrical charging machine will be added to the equipment, and the company are also increasing the size and strength of the building.

The Inland plant at East Chicago, Ind., has added to its equipment a Belgian train from the company's mill at Muscatine, Iowa, consisting of 14-inch roughing and 9-inch finishing rolls. This train will be in operation in a week or so, and will make bars principally, having a capacity of 100 tons a day. To this plant will also be added another puddle mill, part of which has been taken from the dismantled works of the Calumet Iron & Steel Company, not far from East Chicago. The Inland plant in October turned out nearly 5000 tons of finished product.

The directors will hold their regular quarterly meeting in New York on the 27th inst.

The Duquesne Steel Foundry Company.— PITTSBURGH, November 22 (*By Telegraph*).—The Duquesne Steel Foundry Company have been organized at Pittsburgh by W. A. Herron, formerly treasurer of the Lewis Foundry & Machine Company; A. M. Herron, the banker; Thomas Rodd, chief engineer of the Pennsylvania Company; Edward Kneeland of the Frank-Kneeland Machine Company, and Thomas H. Bakewell of New York. The company will probably be capitalized at $200,000, and will erect a plant for the manufacture of basic open hearth steel castings. Plans for the buildings and equipment are under way, but have not been completed.

The Pennsylvania Car Wheel Company of Pittsburgh have sold their car wheel works, located in Lower Allegheny, Pa., to the Pressed Steel Car Company. The plant has a daily capacity of about 600 car wheels.

The Iron and Metal Trades.

After a long period of the most intense activity the Iron markets have quieted down considerably. This is usual at this season of the year. In fact, it has come later than we have been accustomed to. While this is a matter of annual recurrence, this year the special circumstance is added that in the great majority of the different branches the product is engaged for many months to come, running in some lines far into the second half of the next year. Many producers are still so far behind in their deliveries that a quieter spell is welcomed as a relief. In some branches it will require intense activity during the whole of the usually dull period to work off the long delayed orders and the contracts at hand for future delivery.

In the raw materials the situation has changed little. The Coke production for next year has been fully contracted for, and apparently the requirements have not been entirely covered, since a sharp advance over recent contract prices has been realized. The Ore situation is unchanged, the association not having opened its books, as yet, for the next season.

Bessemer Pig in the Central West remains very firm, but only a moderate business has been done. There are indications, from the fact that inquiries are in the market from large consuming interests, that the present scarcity will continue during all of the first half of next year. Western firms have bought round lots in Eastern territory, to cover sales, made earlier in the year, of Western Pig for Eastern delivery, thus releasing it for the Western market.

Steel is very quiet, and $35 to $36 for Billets in the Central West, for delivery during the first half of 1900, is the prevailing quotation. There has been a readjustment, too, in the prices of Basic Open Hearth Billets. It does not appear that buyers are taking hold very vigorously at these prices, which represent a readjustment after the high prices for small lots for quick delivery which necessarily were the basis of all recent quotations.

The market for Muck Bars has continued easy. This is principally due to the fact that leading buyers of Skelp are not placing orders, so that the mills are seeking relief by marketing their Iron in the form of Muck Bar.

In nearly the whole line of Finished Iron and Steel the markets are quiet, and few orders are being entered. In some branches, like in Structural Material, this is causing no pressure whatever. In others, however, like in Plates, Sheets, Bars, Skelp, &c., some mills are seeking business and are trying to encourage sales by concessions from the recent prices for prompt delivery.

What quantities are being taken by the railroad interests is well illustrated by the fact that one mill recently received an order for 33,000 car axles, which represents about 8500 tons.

The report is current that a lot of 20,000 tons of Steel Rails has been sold for shipment to Japan.

The only recent movement in the matter of imports has been that in Old Material. Some lots of Foreign Old Rails have been marketed.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Nov. 22, 1899.	Nov. 15, 1899.	Oct. 25, 1899.	Nov. 23, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$23.25**	$23.50	$22.75	$10.75
Foundry Pig, No. 2, Southern, Cincinnati	20.75	20.75	20.75	9.75
Foundry Pig, No. 2, Local, Chicago	23.00	23.00	23.00	11.00
Bessemer Pig, Pittsburgh	**25.50**	24.50	24.50	10.15
Gray Forge, Pittsburgh	*20.50*	21.00	21.00	9.25
Lake Superior Charcoal, Chicago	**25.50**	25.50	25.00	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	*35.00*	36.00	39.00	15.25
Steel Billets, Philadelphia	*38.00*	40.00	41.50	17.00
Steel Billets, Chicago	.....	.....	.....	17.00
Wire Rods, Pittsburgh	.....	.....	.....	21.00
Steel Rails, Heavy, Eastern Mill	35.00	35.00	35.00	17.50
Spikes, Tidewater	2.65	2.65	2.65	1.40
Splice Bars, Tidewater	**2.35**	2.35	2.25	1.06
OLD MATERIAL:				
O. Steel Rails, Chicago	20.00	20.00	20.00	8.00
O. Steel Rails, Philadelphia	**24.00**	24.00	22.50	10.25
O. Iron Rails, Chicago	**30.00**	31.00	28.00	12.75
O. Iron Rails, Philadelphia	*29.00*	26.00	30.00	12.75
O. Car Wheels, Chicago	**21.00**	20.00	20.00	11.25
O. Car Wheels, Philadelphia	**23.00**	24.00	22.00	10.00
Heavy Steel Scrap, Chicago	**19.00**	19.00	17.00	7.75
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**2.20**	2.20	2.10	1.10
Common Iron Bars, Youngstown	2.15	2.20	2.15	.95
Steel Bars, Tidewater	**2.50**	2.50	2.40	1.10
Steel Bars, Pittsburgh	*2.25*	2.25	2.35	.95
Tank Plates, Tidewater	*2.80*	2.90	3.00	1.25
Tank Plates, Pittsburgh	*2.50*	2.50	2.75	1.12½
Beams, Tidewater	2.40	2.40	2.40	1.35
Beams, Pittsburgh	2.25	2.25	2.25	1.20
Angles, Tidewater	2.40	2.40	2.40	1.20
Angles, Pittsburgh	2.25	2.25	2.25	1.10
Skelp, Grooved Iron, Pittsburgh	2.00	2.00	2.00	1.10
Skelp, Sheared Iron, Pittsburgh	2.40	2.40	2.40	1.20
Sheets, No. 27, Chicago	*3.00*	3.00	3.15	2.00
Sheets, No. 27, Pittsburgh	*2.90*	2.95	3.05	1.85
Barb Wire, f.o.b. Pittsburgh	3.55	3.55	3.55	1.65
Wire Nails, f.o.b. Pittsburgh	2.95	2.95	2.95	1.25
Cut Nails, Mill	2.50	2.50	2.50	1.07½
METALS:				
Copper, New York	*17.00*	17.00	17.37½	12.75
Spelter, St. Louis	*4.25*	4.40	5.10	5.20
Lead, New York	4.57½	4.57½	4.57½	3.65
Lead, St. Louis	4.45	4.45	4.45	3.55
Tin, New York	*28.00*	26.50	30.75	17.75
Antimony, Hallett, New York	9.75	9.75	9.75	9.00
Nickel, New York	**40.00**	40.00	36.00	35.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	**4.84**	4.82½	4.82½	2.80

Chicago. (*By Telegraph.*)

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, November 22, 1899.

The market taken as a whole is less active. Large consuming interests have pretty thoroughly covered their requirements far into the future. Some classes of merchandise are so scarce that buyers are not able to get as much as they want, and in certain branches, particularly Sheets, the weakness which has developed recently causes possible buyers to hold off to await still lower prices. The approach of the close of the year is also alleged to have some effect, as it is desirable at that time to have light stocks for the annual inventory. A period of quietness for several weeks will by no means be surprising, and, in fact, is to be expected in view of all the circumstances.

Pig Iron.—Those who have Iron to sell, whether for this or next year's delivery, find a continued good demand, although the aggregate of sales ran considerably under the previous week. Local Iron is almost an unknown quantity in the market, as the product is sold too far ahead for makers to take further business. Sales of Southern and Ohio Irons are being made for delivery next year, the greater part for shipment in the last half. Lots of 2000 to 3000 tons have figured in fair number among recent transactions. Prices have been stationary, but intimations are given that Southern brands are likely to be advanced before long. The leading Southern maker is, in fact, now asking 25c. more on No. 2 Foundry, which is particularly scarce. Sales of Lake Superior Charcoal are reported, although on the same large scale as in previous weeks. We quote for cash as follows:

Lake Superior Charcoal	$25.50 to $26.50
Local Coke Foundry, No. 1	24.00 to 25.00
Local Coke Foundry, No. 2	23.00 to 24.00
Local Coke Foundry, No. 3	22.50 to 23.00
Local Scotch, No. 1	24.00 to 25.00
Ohio Strong Softeners, No. 1	24.50 to 25.00
Southern Silvery, according to Silicon	25.50 to 27.00
Southern Coke, No. 1	22.85 to 23.85
Southern Coke, No. 2	21.85 to 22.85
Southern Coke, No. 3	21.10 to 21.85
Southern Coke, No. 1 Soft	22.85 to 23.85
Southern Coke, No. 2 Soft	21.85 to 22.85
Foundry Forge	20.80 to 21.35
Gray Forge and Mottled	20.80 to 21.35

Southern Charcoal Softeners, according to Silicon	21.85 to	25.85
Alabama and Georgia Car Wheel	24.85 to	25.85
Malleable Bessemer	.... to	25.00
Standard Bessemer	25.00 to	26.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	31.80 to	32.50

Bars.—Manufacturers of Bar Iron report a good demand from some consuming interests, but orders are now calling for moderate quantities only. The car builders have covered their requirements for a considerable time, and jobbers are buying rather carefully in view of the approach of the inventory period. The demand for Soft Steel Bars has also been rather light, owing to the same causes. Prospects for the future are still decidedly encouraging, a much heavier trade being expected in December. Mill shipments of Common Iron are steady at 2.30c. to 2.40c., Chicago, Soft Steel Bars at 2.35c. to 2.65c., and Hoops at 2.65c., base, for Bands. Jobbers are enjoying as large a business as at any previous time this fall, with shipments from mills still coming so slowly that stocks are kept badly broken. They hardly found it necessary to send out salesmen, as orders come in freely by mail, telegraph or telephone. Small lots from stock are quoted at 2.90c., minimum, for Bar Iron; 2.65c. to 3c. for Soft Steel Bars, and 3.90c. to 4c. for Norway and Swedish Iron.

Car Material.—Although contracts for cars are still being placed, the car builders seem to be pretty well supplied with material and orders coming from this source are not so numerous.

Structural Material.—The week has developed nothing of special importance in the line of new business, a moderate volume being done in small lots. City business is still extremely quiet, most orders coming from the outside. Universal Plates are lower, especially narrow widths. Skelp mills are offering this class of product, and have recently made some extremely low prices. An order is in the market for 1600 tons of Universal Plates, on which competition is stated to be keen. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 2.78c. A large business is being done in Shapes from local yards at prices showing quite an advance on rates for mill shipments.

Plates.—Good specifications have been received from some large consumers, and the general demand from the trade has been excellent both from mill and from stock. Considerable irregularity prevails in prices, due to the competition from mills making a limited range of sizes. Mill shipments are, therefore, quoted for Chicago delivery according to sizes and widths as follows: Tank, 2.90c. to 3.05c.; Flange, 3.15c. to 3.25c.; Marine, 3.30c. to 3.50c.; Fire Box, 4c. to 5½c. Jobbers quote Tank from store at 3.25c. to 3.40c., and Flange, 3.50c. to 3.65c.

Merchant Pipe.—A fair demand is reported for mill shipment, which represents about the usual trade at this season. Carload lots are quoted at 50 and two 10's and less than carload lotts at 50, 10 and 5 per cent. Merchant Steel Boiler Tubes are quoted as follows: 1¼ to 1¾ inches, 35 per cent. off on Steel or Iron; 2 to 2¾ inches, 50 per cent. off on Steel, and 45 per cent. off on Iron; for 3-inch and larger, 52½ per cent. off on Steel, 47½ per cent. off on Iron.

Sheets.—This is the dull period of the year in the Sheet trade, and the situation is made still worse by the weakness now manifested in prices. Manufacturers have stocks at mills which some of them are making strenuous efforts to move. Meanwhile large buyers are not taking hold unless they desire something for immediate consumption, but are waiting for the market to much bottom. Present prices are below cost of production based on the market price of Sheet Bars, and if Bessemer Pig Iron continues firm it is believed that a sharp reaction in prices of Sheets may come at almost any time. The manufacturers are understood to be at work on another plan for consolidating their interests, and, if this should succeed, it will also put a different aspect on the situation. Mill shipments of No. 27 Black Sheets are quoted at 3c. to 3.15c., Chicago, and Galvanized at 75 to 75 and 5 per cent., but reports are current that lower rates than these have been made. Jobbers are having a fair demand for Galvanized Sheets in small lots, particularly from the furnace trade. They quote from stock at 3.25c. to 3.40c. for No. 27 Black, and 70 to 70 and 10 per cent. off for Galvanized.

Merchant Steel.—Orders are not so numerous as they were, but the mills are loaded with work and the lull is welcome. Mill shipments, Chicago delivery, are quoted as follows: Smooth and Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward. Jobbers are quoting from store: Crucible Spring Steel, 6c. rates; Open Hearth Spring Steel, 5c.; Smooth Machinery Steel, 5½c.; Toe Calk Steel, 4c.

Billets and Rods.—The local makers are out of the market.

Rails and Track Supplies.—Considerable tonnage in Standard Sections of Steel Rails is in sight, and good orders are expected to be placed shortly. An order for 20,000 tons for export to Japan is believed to have been secured at Pittsburgh. An inquiry is out for 4500 tons of 30-lb. Rails for South Africa. Prices are continued at $35 to $37 for Standard Sections, and $35 to $42 for Light Rails, according to weight, time of delivery, &c. Prices of Track Fastenings are as follows: Steel Fish Plates, 2.50c.; Iron Fish Plates, 2.50c. to 3c.; Spikes, 2.75c. to 2.80c.; Track Bolts, with Hexagon Nuts, 3.95c to 4c.; Square Nuts, 3.80c. to 3.85c.; Steel Links and Pins, 3.25c.; Iron Links and Pins, 3.15c.

Old Material.—Dealers report a good demand for high grade Wrought Scrap, but only a moderate movement of Cast. Quite a large business is being done in Heavy Melting Steel Scrap. Approximate market prices are as follows per gross ton:

Old Iron Rails	.... to	$30.00
Old Steel Rails, mixed lengths	$20.00 to	20.50
Old Steel Rails, long lengths	22.50 to	23.00
Relaying Rails	25.00 to	27.50
Old Car Wheels	.... to	21.00
Heavy Melting Steel Scrap	19.00 to	20.00
Mixed Steel	15.50 to	16.00

Following prices are per net ton:

No. 1 Railroad Wrought	$24.00 to	$25.00
No. 1 Railroad Track	20.50 to	21.00
Dealers' Forge	18.00 to	19.00
Iron Fish Plates and Angle Bars	.... to	26.00
Steel or Mixed Iron and Steel ditto	19.00 to	20.00
No. 1 Cut Mill, for busheling	13.50 to	14.50
Pipe and Flues	13.00 to	13.50
Heavy Cast	15.00 to	15.50
Stove Plate	10.25 to	10.50
Railroad Malleable Cast	.... to	16.50
Agricultural Malleable Cast	.... to	15.00
Iron Car Axles	.... to	30.00
Steel Car Axles	.... to	24.00
Horseshoes	18.00 to	19.00
Cast Borings	10.00 to	10.50
Steel Car Axle Turnings	12.50 to	13.00
Iron Car Axle Turnings	13.50 to	14.00
Machine Shop Turnings	12.00 to	12.25
Old Boilers, Iron, whole	8.00 to	9.00
Old Boilers, Iron, cut	14.00 to	15.00
Old Boilers, Steel, whole	7.00 to	8.00
Old Boilers, Steel, cut	13.00 to	14.00

Metals.—Copper is unchanged, carload lots of Lake being held at 17¾c., and Casting Copper at 17¼c. Pig Lead is steady at 4.55c., with only a moderate demand from Western buyers, who are taking much less than Eastern interests. It is not expected that the demand will improve until after the turn of the year. Spelter is cheaper, and carload lots are quoted as low as 14.25c.

Tin Plate.—General trade is somewhat quiet, as is usual at this season. An increased demand is observed in a moderate way for Bright Plates, which are now going more largely to tinners, who are again making up stocks of tinware for their own trade. The demand for Roofing Plates is holding up a little later than usual, owing to the open weather. Prices are the same as before.

L. K. Hirsch, dealer in Old Railway Material, Rookery Building, Chicago, is distributing a vest pocket book for holding postage stamps, bound with celluloid cover, and also containing leaves bearing a calendar for 1900.

The National Tube Company have removed from the old quarters so long occupied by the National Tube Works Company at Canal and Fulton streets, Chicago, and the building will be used by other parties for a different purpose. The company have taken a suite of offices in the Western Union Building, at the corner of Jackson Boulevard and Clark street. They will occupy rooms running from Nos. 210 to 216. The downtown location is expected to prove much more convenient for the trade at large. As previously announced, the company will no longer carry a stock of their products in Chicago.

Organizers of the proposed American Bridge Company were in Pittsburgh last week in consultation with representatives of local concerns to be included in the venture. The party consisted of Charles J. Jarvis of Berlin, Conn.; I. G. Ladd of New York; Frank Conger of Croton, N. Y., and Charles Macdonald of New York. One of them said that the combination had not been completed, and would probably not be for some time. It is to have a capital stock of $67,500,000. It is intended to include the Keystone Bridge Works in the combination owned by the Carnegie Steel Company.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., November 21, 1899.

The market is a little unsettled, and as a rule prices are easier than they were a week ago. There is no distinct weakness in any direction, nor is there any great pressure to sell, but applications for material are met in a liberal spirit, and for *bona fide* business slight concessions are not hard to secure. This would not apply in all cases, but where shortages of work in some specialties can be filled in buyers have the advantage. The truth of the matter is that there is considerable uncertainty in regard to next year's business, or rather, in regard to the relative proportions in supply and demand. The prospective supply will be largely increased, the demand will no doubt be large also, but buyers are not sure that they will have to pay as much for material as they have had to pay during the past six months, at any rate they are disposed to wait and see. The scarcity and the higher cost of raw materials will prevent any serious decline, and may indeed ultimately lead to higher prices than we have yet seen. These are unknown quantities, however, and are doubtless responsible for the waiting attitude which buyers have assumed. The fear is not in regard to oversupply, but there is some fear of paying too much money by buying too soon.

Pig Iron.—The market during the week has been tame, compared with what it was during the past several months. New business is slow, consumers being inclined to postpone operations pending more light on the situation. Fairly liberal provision has been made for requirements during the next six months, and it is considered good policy to await developments before entering into further engagements. To some extent the same feeling is met with among sellers. They have a great deal of Iron sold, and as the cost of production will be largely increased they are in no hurry to make additional sales unless they can secure something very close to the top figures recently ruling. As a matter of fact, neither buyers nor sellers are particularly anxious about new business, so that the stand off is likely to continue until there is some evidence of a movement which will be distinctly favorable to one side or the other. Transactions during the past few days throw no new light on the situation whatever. Iron can be had in limited quantities on slightly better terms than could have been done a couple of weeks ago, $23.50 for No. 2 X Foundry, possibly $23.25 might be done by furnaces that are likely to have a little Iron to spare during the next six or eight weeks, but in most cases $23.75 and upward is asked for any considerable sized lot, and for deliveries later than April still higher figures are required. From this it will be seen that almost any quotation from $23.25 to $24.50 for No. 2 X Foundry might be given without misrepresenting the market, but of course the circumstances in each particular case need to be considered in determining the exact status of the transaction. It is not a one-sided market by any means, and it will take a little time to develop its precise character. The demand from the West has pretty nearly ceased, so far as the Virginia furnaces are concerned, and that is one reason for somewhat freer offerings in this vicinity, but, as we said before, there is no great pressure, but as the Iron is in sight buyers take advantage of it to give force to their reduced bids. Some Bessemer has been taken during the week at a figure pretty close to $24 at furnace, and Low Phosphorus in good sized lots at $28 to $29, according to delivery. The range of prices at this time is about as follows for Philadelphia or its equivalent: No. 1 X Foundry, $25 to $25.50; No. 2 X Foundry, $23.25 to $24.25; No. 2 Plain, $22.25 to $22.75; Standard Mill Iron, $20.25 to $21; Basic, $23.25 to $23.50; Bessemer, nominal, $25 to $26; Low Phosphorus, $28 to $29.

Muck Bars.—The demand has again fallen off, and prices are lower. Sellers are asking $31, f.o.b. cars their mills, but buyers are talking about a dollar less. No sales reported within the past few days, so that for the present it is difficult to give exact prices.

Billets.—The feeling is very unsettled. Steel is wanted, but buyers hardly know what price to bid, although it is believed that about $37 to $38 would bring in a fair amount of business. Up to this date, however, $40 appears to be about as low as makers have been willing to quote.

Plates.—There is a good demand, but prices are gradually seeking a lower level. There is plenty of work in progress, but, owing to the shortage of other material, Plates are in comparatively large supply. Structural Material has been so scarce that Plates have had to wait until Shapes could be had to carry on the work. This has been particularly noticeable in the shipyards in which considerable delays have been met with on account of the difficulty in securing shaped material. Most of the structural mills are closely allied with bridge builders, and on the principle that charity begins at home the bridge shops have had the first call on such material as was required to keep them fully employed. Large quantities of Plates are wanted, however, but at present orders are kept back for the reasons mentioned. Prices for seaboard or equivalent deliveries are about as follows: Steel Plates, ¼-inch and thicker, 2.80c. to 2.90c.; Shell, 3c. to 3.05c.; Flange, 3.25c.; Fire Box, 3.40c.; Charcoal Iron Plates, C. H. No. 1, 3.15c.; Best Flange, 3.65c.; Fire Box, 4.15c.

Structural Material.—There is nothing of interest to report under this heading. Mills are not pushed for deliveries as much as they were a little while ago, but it is still difficult to meet all the demands that are made on them. Prices are supposed to be as follows, but premiums are still paid to get what is wanted for delivery before the end of the month (seaboard or nearby deliveries): Beams and Channels, 15 inches and under, 2.40c.; Angles, 3 to 6 inches, 2.40c.; Zee Bars, 2.40c., f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.45c.

Bars.—The market is not as buoyant as it was some time ago, but there is still a very satisfactory demand. There is more irregularity than there is weakness, concessions being made only on special sizes on which the mills happen to be short of work. This appears to be mostly on large sizes, small sizes being in active demand at full quoted rates. Prospects are good, and it is thought that some large blocks will be taken in course of a few days, inquiries for which are already under consideration. General quotations for delivery at seaboard or nearby points are about as follows: Ordinary Iron, 2.10c. to 2.15c.; Refined Iron, 2.20c. to 2.25c.; Test Iron, 2.30c. to 2.35c.; Steel Bars, 2.50c. to 2.75c.

Sheets.—There is less demand for thin Sheets, and prices are lower. Thick Sheets are in good demand, and mills are running to full capacity. Stocks at mills are completely exhausted, so that a few weeks' dullness will do no harm, as it is desirable to have some stock on hand. Prices for best makes are quoted as follows (Common Sheets two-tenths less): No. 10, 3c. to 3.05c.; No. 14, 3.20c.; No. 16, 3.25c.; Nos. 18-20, 3.30c.; Nos. 21-24, 3.40c.; Nos. 26, 27, 3.50c.; No. 28, 3.60c. to 3.70c.

Old Material.—The market is irregular, and, although attempts are made to talk prices down, very little headway appears to be made in that direction. Sales have been made at figures as follows: Steel Rails, $25; Heavy Melting Steel, $24; Iron Axles, $33.50; Choice No. 1 Scrap, $28; Good Yard Scrap, $23; Machinery Cast, $19; Wrought Turnings, $16.25; Cast Borings, $15, and $15 for Stove Plate. Bids and offers at this time are about as follows for deliveries in buyers' yards: Cast Borings, $14.50 to $15; Wrought Turnings, $16 to $16.25; Machinery Cast, $18 to $19; Old Car Wheels, $23 to $24; Heavy Steel Scrap, $22.50 to $24; Steel Rails, $24 to $25; Iron Rails, $29 to $30; No. 1 Yard Scrap, $22 to $23; No. 1 Railway Scrap, $26 to $28; Iron Axles, $33 to $34; Steel Axles, $30 to $32.

Cincinnati. (*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main streets,
CINCINNATI, November 22, 1899.

Trading in Pig Iron throughout the past week has been on the same easy lines which have been prevailing lately. Taken as a whole the amount of business has only been small when compared with the heavy totals of six weeks ago. Large buyers have been holding off and sellers have been showing more aggressiveness in chasing down orders. There has been a fairly satisfactory run of orders for 300 and less tons, with a few more larger trades than were reported for the previous two or three weeks. A sale of 4000 tons of Northern Coke, Malleable, at $22.50 and $23 at the furnace is reported. Several thousand tons of Gray Forge are quoted at $15.75, Birmingham. Also 1000 tons same on basis of $16. Selling is generally to cover first half of next year, though a fair proportion of the tonnage sold is being booked for the third quarter. With the quiet conditions at present prevailing no higher prices are looked for, but in the event of a big movement of large consumers to cover their known wants for any length of time it is thought likely that prices would take another jump. The market to-day is quiet and firm at quotations given herewith. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$21.75
Southern Coke, No. 2	20.75
Southern Coke, No. 3	19.75
Southern Coke, No. 4	19.50
Southern Coke, No. 1 Soft	21.75
Southern Coke, No. 2 Soft	20.75
Southern Coke, Gray Forge	$19.00 to 19.50
Southern Coke, Mottled	19.00 to 19.50
Ohio Silvery, No. 1	30.00
Ohio Silvery, No. 2	29.00
Lake Superior Coke, No. 1	$23.50 to 24.00
Lake Superior Coke, No. 2	22.50 to 23.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, Chilling Grades.	$24.75
Standard Southern Car Wheel, No. 2.....	23.75
Lake Superior Car Wheel and Malleable.....	25.00

Plates and Bars.—The market for Plates and Sheets is much quieter, and while not quotably lower, yet a weakness is apparent. Bars on the other hand are more active than for some little time and are firm at quotations. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.65c.; small lots, 2.80c.; Sheets, No. 10, 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 3c. to 3.10c.

Old Material.—Prices are unchanged, and the market is quiet and firm. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $22 to $23 per net ton; Cast Scrap, $15.50 to $16 per gross ton; Axles, $26 to $27 per net ton; Iron Rails, $28 to $29 per gross ton; Car Wheels, $20 to $21 per gross ton.

St. Louis. *(By Telegraph.)*

Office of *The Iron Age*, 512 Commercial Building, St. Louis, November 22, 1899.

Pig Iron.—There has been no material change from conditions which prevailed last week. Quite an inquiry is had from smaller buyers for some of next year's wants. A fair amount of Iron has been sold in small lots, but not a single transaction of note. No weakening is seen in prices, and that furnaces hold firmly to present figures was seen in refusal to accept offers slightly under the market. Commenting on press market reports to the effect that warrants were selling off in New York, a prominent factor in Pig Iron circles says: "The sale of warrants does not have much bearing on the market, for consumers do not purchase them and dealers who buy naturally bear the market for warrants when they can do so, for the purpose of buying at price that would enable them to make a fair profit. The difference between buying warrants and paying spot cash for 2240 lbs., instead of buying on usual furnace terms of cash 30 days after delivery per 2268 lbs., would cut quite a figure to the consumers." Furnaces in blast to-day could run out in ten hours the 16,000 odd tons of Iron in warrant yards on November 1, so it is hardly possible that even actual fluctuation in prices of warrants could weaken asking prices for the preponderant output of furnaces. We quote without change from last week, f.o.b. cars St. Louis:

Southern, No. 1 Foundry	$22.25 to $22.50
Southern, No. 2 Foundry	21.50 to 21.75
Southern, No. 3 Foundry	20.25 to 20.50
No. 1 Soft	22.25 to 22.50
No. 2 Soft	21.50 to 21.75
Gray Forge	20.00 to 20.25

Bars.—The week has been quiet, but not inactive. Orders are coming in from day to day, but mills will probably catch up with the demand by the turn of the year. Still jobbers seem to have no abundance of stock and apparently are not yet receiving the full shipments covering specifications of months ago. Mill quotations for Iron remain at 2.35c. to 2.50c., base, half extras, for carload lots, East St. Louis, and higher for assortments. Jobbers' prices range from 2.75c. to 2.90c., base, full extras. Soft Steel Bars show no change, range being from 2.50c. to 2.75c., base, half extras, carloads; 3c., base, full extras, is asked by jobbers for small lots.

Rails and Track Fastenings.— Demand is rather light this week. Buyers who have not covered their wants in the past are now coming in, but for small lots only. Those who have bought are hastening deliveries which should have been in months ago. We quote: Splice Bars, Steel, 2.55c.; Iron, 3c. to 3.50c.; Track Bolts, with Square Nuts, are now 3.80c.; with Hexagon Nuts, 3.95c.; Spikes, 2.85c.; Steel Links and Pins, 3.20c.

Pig Lead.— A firmer tone is felt, but deals entered into are not above the regular run, and 4.47½c. is the normal bid, irrespective of grade, but refiners of Soft Missouri ask that. Chemical is held at 4.50c. Lead Ore reacted to an extent of 50c., and was sold at $27 per 1000 lbs.

Spelter.— This metal has been unchecked in its downward movement. It is safe to say that it is not marketable here above 4.25c. It is said Pittsburgh was offered at 4.40c., with practically same figure at New York. No conferences have been reported lately between mine owners and smelters, and none seem in sight. Miners are actively working at a proposition to build their own smelters, but definiteness has not been arrived at. Zinc Ore is openly reported at a top price of $32.50, indicating a drop of $2.50 in one week, but, as last week, quiet buying was undoubtedly done at a lower figure.

Birmingham.

Birmingham, Ala., November 20, 1899.

The past week developed a greater activity in the market than has prevailed for some time past. It was not unexpected, and business was restricted by the inability of furnaces to meet the requirements of the buyers. When delivery could be met there was no trouble to place the Iron. To show, in part, the condition of the market the leading interest can accept orders for only the Soft grades for first half of 1900 delivery. One order for 6000 tons of Basic at $17.50 was turned down on account of being sold up for first half of 1900. Some Silver and Gray went at $20.50, an advance of 50c. While this grade cuts no figure in quotations, the advance shows that buyers are paying the prices asked. The rush for deliveries is unabated. In several instances where the contract calls for delivery commencing in January requests have been urgent to anticipate the time and ship at once. To show buyers the utter impossibility of meeting their desires your correspondent was shown a daily report of stock on hand from several furnaces for Saturday the 18th. At one furnace where two stacks are in blast it was 57 tons. At another consisting of four stacks it was 200 tons. At another of five stacks it was 500 tons. You must consider that these various amounts include the various grades, eight or nine in number. It is quite evident, therefore, how little of any one grade is available for shipment, even if the reported stock was an accumulation. It is not even that. It is stock (odds and ends), waiting cars, and some of it waiting a growth to a carload before shipping. One furnace reports 4000 tons in yards, but none of it surplus, simply awaiting cars. This is the time of the year when buying is usually slack. The fact that inquiry has so decidedly increased shows that the requirements of buyers have been far from being supplied, and that they must come into the market in the near future. The information and belief here is that several large interests who have been holding off, waiting for a sag in the market, can delay buying but a short time longer. One of them was feeling the market here the past week for 25,000 tons, but could get no proposition entertaining delivery short of last half of 1900. In the meantime the contingent of small buyers is constantly in the market, and there is a buyer for every car for which prompt shipment can be promised. This keeps stock well cleaned up. The small margin against export trade, amounting in some instances to only 50c. per ton, is beginning to attract attention and revive the expectation of business in that quarter. The constantly increasing stiffness in the foreign markets will soon bring that trade to a parity with domestic prices, and if there should be a recession in prices to only a very moderate extent there would be an opening for a large foreign trade, for they would be hungry for Iron, and take it as fast as it was fed to them. Any way, there is great confidence felt that the foreign markets are the safety valve against any material depresion in price for some time to come.

As the Steel mill nears the time for commencing operations and the various parts are tested alone and in conjunction with each other, it is found that a little thing here and another there needs alteration or adjustment to a perfect working of the whole. This takes time, as defects and deficiencies crop out where unexpected. But the successful launching of the great work is a question of only a few days. The Rod and Nail mill will be ready to take the product of the Steel mill by the time it is fairly started.

Numbers of industries are looking over the field here and several negotiations for sites are pending. The Cement Works at Ensley City, which makes its cement from the furnace slag, has commenced operations on a small scale, and will increase output as preparations are completed. There is an active interest being manifested in mineral lands, and several large trades are pending, which will hinge on the reports of exports now examining the various properties.

The dealers in machinery still report an active demand that is beyond their capacity to promptly meet. The Southern Foundry Supply Company was incorporated the past week with a capital of $10,000, Geo. B. Bates being president and treasurer. It is said to be the only corporation of the kind south of the Ohio River. The repair shops have all the work they can do, while those doing contract work are supplementing completed contracts with fresh ones, and all have orders whose completion will carry them well into 1900. The outlook here for a profitable season next year could not be better.

The St. Louis Terminal Cupples Station & Property Company reports for the six months ended November 1: Received from rents, &c., $132,290; all expenses, including taxes, &c.,$33,640; total, $118,450; bond interest for six months, $67,500; surplus, $50,950.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, November 22, 1899.

(By Telegraph.)

Pig Iron.— There has been very little done. Sales of probably 8000 to 10,000 tons of Bessemer Pig for November, December and January delivery have been made at prices ranging from $24.90 up to $25.75, Pittsburgh, and higher. Very little Iron is to be had for this and next month, and $25 at furnace, equal to $25.75, Pittsburgh, is asked. One large Steel interest is reported to be inquiring for a round block of Iron for the first half of 1900. There is some inquiry for Gray Forge and prices are very strong. Small lots have sold up to $21 at Valley furnace for prompt shipment. Foundry Iron is also in good demand, and the market is very firm. We quote Bessemer, $24 at Valley for first half; Gray Forge, $20.50 to $21, Valley furnace; No. 2 Foundry, $23 to $23.50; Gray Forge, $21 to $21.25; Bessemer, $24.75 for Iron for next year and $25.50 to $25.75 for prompt shipment, all f.o.b. Pittsburgh. We note a sale of 2000 tons of Bessemer made a few days ago at $24.90, Pittsburgh. The market to-day is quoted considerably higher.

Steel.— There is some inquiry for Steel, but very little is being sold. Consumers do not appear willing to take hold at present prices. Bessemer Billets are quoted all the way from $35 to $37, depending on tonnage and deliveries wanted. So far as we can learn, there has been very little Steel sold for next year, and whether $35 and $36 can be secured is a question. Basic Steel is in more plentiful supply and is quoted at $45 to $50 at mill, depending on carbons, sizes and deliveries wanted.

Sheet Bars.—The market is quiet but prices are strong at $36 to $36.50, delivered buyer's mill. We have not heard of any sales for some days. Most of the Sheet mills are using Bars bought at lower prices and will not buy until present contracts run out.

Scrap.—The Scrap market is very strong and certain kinds of material are scarce. No. 1 Wrought Scrap is quoted at $24 net ton; Steel Rails, mixed lengths, are $21 to $22; short pieces, $22 to $24; Iron Rails are lower and are quoted at $28 to $30; Cast Scrap is $19 to $20; Busheling Scrap, $17 to $18, net ton. All other prices are for gross tons.

Spelter. — The market continues weak, and prime Western Spelter is offered at 4.40c., Pittsburgh.

(By Mail.)

Taken as a whole, the week under review in the Iron trade has been quiet. Bessemer Pig Iron is very strong, and so is Coke. Prompt Bessemer has sold above $25, Pittsburgh, and the furnaces now ask $24, at furnace, for Iron for first half. Up to $3 a ton for Connellsville Furnace Coke for all next year has been offered. Steel is quiet, and the tone of the market is weaker. It is evident that desirable tonnage could be placed for next year at about $35, at mill. The volume of business in Finished Material is steadily shrinking, buyers evidently having decided to place orders for immediate requirements only. Many of the smaller Finishing mills have about cleaned up all orders and are going after tonnage more aggressively and naming lower prices. This is particularly true of Plates in narrow sizes, Sheets, and one or two other lines. However, it is recognized that prices on nearly all kinds of Finished Material were relatively higher than they should have been, and the declines that have taken place are more in the nature of a readjustment. It is believed that after the first of the year tonnage will be large, and prices may be stronger. As it is now, jobbers and many consumers of Steel have decided not to buy for extended delivery at present high prices. At the Hardware dinner given in Pittsburgh on last Friday, Andrew Carnegie made the statement that he believed 1900 would be a year of heavy tonnage, and this belief is shared by many of the large manufacturers in this city. It is also believed that 1900 will be a very profitable year. While prices may not be as high as they were this year, yet contracts will be pretty well cleaned up and new tonnage will be at much higher prices than prevailed in the early part of this year, when so many large contracts for extended delivery were made. Mr. Carnegie referred to Billets at $15 and Rails at $16.50 running through this year, but it is safe to say there will be no contracts made early next year at any such low prices.

Plates.— The Plate market is somewhat quiet. The tonnage going into Steel cars is tremendous, and were it not for this consumption the market would probably be somewhat demoralized. The larger Plate mills are well filled up for the first three or four months of next year, and are quoting about 2.75c., at mill, for Sheared Plates. The smaller Plate mills, principally in the East, that started up late, have their order books cleaned up and are naming lower prices, especially on Plates up to 48 inches and 52 inches wide. We quote Sheared Plates at 2.50c. to 2.75c., the lower price being for Plates for next year, and the higher price for wide sizes and prompt delivery. It is not unlikely that for very desirable orders our price of 2.50c. would be shaded by some mills, especially for tonnage where deliveries run through first half of the year. Shell is 2.60c. to 2.70c.; Flange, 2.70c. to 2.80c.; Marine, 2.80c. to 2.90c.; Fire Box, 3c to 3.75c., all f.o.b. makers' mill.

Bars.— Nearly all the mills in the West rolling Iron and Steel Bars are now quoting on the new classifications which appeared on page 31 of *The Iron Age* of November 16. The car companies have recently placed considerable tonnage in both Iron and Steel Bars, and the volume of business is fairly large, though not as heavy by any means as two or three months ago. Some of the Bar mills have pretty well cleaned up old orders and are more disposed to shade prices for new tonnage. We quote Common Iron Bars at 2.15c. to 2.20c., Valley mill, equal to 2.20c. to 2.25c., f.o.b. Pittsburgh. Local mills rolling high grade Iron Bars ask higher prices, and quote from 2.40c. to 2.50c., at mill. The market on Steel Bars is not as firm as it was, some mills being more disposed to make concessions to secure tonnage. Steel Bars are quoted by outside mills at 2.25c, and by local mills at 2.50c. The above prices are all f.o.b. Pittsburgh; terms, net, 30 days, half extras, as adopted November 10.

Rails. — Only light sales are being made, and there are no large orders in the market. We quote at $35 to $37 for Standard Sections, at mill.

Structural Material.—There is a good deal of tonnage being placed, but mostly for small lots. Both local mills are from two to three months behind in deliveries. It is claimed that as high as 3c. has been offered for 6-inch Beams for spot shipment. Grooved Rolled Plates are lower. We quote: Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.50c. to 2.75c., Pittsburgh.

Sheets.— There is nothing of special interest to note in the Sheet trade. There is only a fair volume of business, and prices are still weak. It is claimed a movement is now on foot, which may develop into the Sheet mills being consolidated. The mills are to take stock in the new company in payment for their plants, instead of putting the stock on the market, as proposed in the old scheme. We quote No. 27 Black Sheets, Box Annealed, one pass through cold rolls, at 2.90c. to 3c.; No. 28, 2.95c. to 3.05c. Some mills are quoting considerably higher prices. Galvanized Sheets are weak in price, and it is reported some very low quotations have recently been made. We quote at 75 to 75 and 2½ per cent., 15c. freight, in carload lots. For very desirable tonnage, a few mills might slightly shade these prices.

Merchant Steel.— There is a good deal of tonnage being placed, and some of the mills are well filled up for some time. The tone of the market is fairly strong, and we quote: Toe Calk, 2.75c., base; Tire, 2.75c., base; Open Hearth Spring, 3.25c. to 3.50c.; Plow Slabs, 3-16 and heavier, 2.75c. to 3c.; Bessemer Machinery, 2.75c. to 3c.; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, tapered and bent, 3.75c. to 4c.; Cant Hook Steel, Open Hearth, 4c. to 4.25c.; Crucible, 5c. to 5.25c.; Tool Steel, 7c. and upward, depending on quality. Terms, net cash 30 days. All half extras as adopted November 10.

Pipes and Tubes.— As noted last week, the mills report a somewhat better demand in November than for October. Any unevenness in prices on Pipe is attributed to jobbers who bought when the market was lower. We are advised that the mills are adhering to established prices. We quote Black and Galvanized Merchant Pipe at 50 and two 10's, delivered, in carload lots. Demand for Oil Well Casing is better than last month. We quote Screw and Socket Joint Weld Casing, 37½ per cent.; Inserted Joint, 32½ per cent., with an optional 5 per cent. to dealers. Demand for Boiler Tubes is heavy, and the mills considerably behind in deliveries. Prices are very strong, and we quote: 1¼-inch and 1½-inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger Iron, 52½ per

cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered.

Skelp. — The Skelp market continues quiet, and prices are weak. We quote Grooved Iron and Steel Skelp at 2c. to 2.05c., and Sheared at 2.40c. to 2.45c., at buyer's mill. For a very desirable order it is possible that some mills might slightly shade these prices.

Connellsville Coke.—Last week there were 18,585 ovens in the Connellsville region active, only 671 idle, the estimated output being 190,534 tons. The demand for Coke is the largest ever known, and Furnace Coke for delivery all through next year has sold at prices ranging from $2.60 up to $3 a ton. Foundry Coke is very strong at $2.75 to $3, and for small lots for spot shipment has sold at $3.25 a ton. The Coke business has never been so prosperous as it is at this time, and the outlook is that output for 1900 will be much the largest in the history of the Connellsville region. Nearly all the furnaces, and many of the foundries, have placed contracts for their entire requirements of Coke running all through next year.

Cleveland.

CLEVELAND, November 21, 1899.

Iron Ore.—The association of Iron Ore producers has as yet called no meeting, and it is indeed extremely unlikely that the organization will get together to fix prices before December 1. Sales of Ores outside the association continue, however, at advances ranging all the way from 60 to 90 per cent. above last year's prices, and sales of considerable quantities of non-Bessemer grades have been made during the past week at considerably more than 100 per cent. over the 1898 selling price. Each of these victories for the bullish element will, of course, have its influence upon the association figure, and confidence is growing in the belief that prices will be pretty nearly doubled up on all grades. No. 1 Specular non-Bessemer may be quoted at $4 to $4.50, and other grades in proportion.

Pig Iron. — The market has shown practically no change whatever in the seven days closing to-day. The demand has kept fully up to the average of preceding weeks. The major part of the sales have been of Foundry and Mill Irons, and are almost without exception for delivery during the first half of next year, many buyers who have hitherto held off being convinced that they must provide for their next season's wants or run the risk of being cut off with a scant supply of some grades. No sales of Bessemer have been reported for two weeks, and the great majority of the furnaces will have none to sell until about July 1 next year. For Foundry grades the common quotation is $22.50 for No. 1 and $23 for No. 2, although sales of each have been made within the past few days at prices 50c. higher in either case. Small lots of Iron for spot delivery continue to command fancy prices, and there were additional sales this week in which prices in excess of $24 at the furnace were paid. The car famine which caused so much inconvenience to the furnacemen has rather eased off, and there is a probability that henceforth until the end of the season Ore will go forward with fair dispatch.

Finished Material. — Sales have been made during the week just closed which in the aggregate are probably very close to those of the weeks which have preceded it. The inquiry has been excellent and has been well distributed. There has been little inquiry for Rails, but that it would be otherwise is hardly to be expected. Plates have figured in the market in a small way, and as in the case of other grades sales made have been on the basis of the prices last quoted. In Structural the market has been quiet. One of the interesting factors of the situation is found in the new Plate mills, the production of which when it reaches the market will not be without influence. Contracts for Plate for delivery from these new mills two or three months hence are now being made. It is announced that the Carnegie Company will be ready within a very short time to commence delivery on the Plate required for the seven lake freighters which the American Shipbuilding Company will build for them.

Old Material.— No alterations in quotations have been made, and the demand for Scrap of all kinds still keeps up to the high level which it attained some weeks ago. The supply of some grades is none too good, but dealers are, as a rule, managing to meet customers' needs. It is not anticipated that the present week will see any change.

(By Telegraph.)

The sudden advent on the market of a considerable quantity of Ore and fears of a freeze on the part of shippers have braced the transportation market materially, and rates have gone up to $1.25 from the head of lakes and 90c. from Escanaba. Some Marquette charters are also reported at $1. The demand for Ore tonnage is not very heavy, but the market is firm at the figures given. The report of the lease by Rockefeller of additional mining property in the Lake Superior district is regarded here as not without significance.

New York.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, November 22, 1899.

Pig Iron.—There has been a moderate volume of business, and in some cases there is evidence that makers can figure out their ability to take additional orders for moderate lots at a shade under the recent extreme prices. Prices are as follows: Lehigh and Schuylkill Irons, for 1900 delivery, No. 1 Foundry, $25 to $25.25; No. 2 X, $23.75 to $24; No. 2 Plain, $22.25 to $22.75, and Gray Forge, $19.75 to $20. Southern brands are quoted: No. 1 Foundry, $24 to $24.50; No. 2 Foundry, $22.25 to $22.50; No. 1 Soft, $22 to $22.25; No. 2 Soft, $21 to $21.25; No. 3 Foundry, $20.75 to $21.50, and Gray Forge, $20.25 to $20.50.

Cast Iron Pipe.— The market is very quiet, no contracts of any magnitude being reported.

Steel Rails. — Eastern mills do not report any sales of consequence and continue quotations at $35 to $37 for Standard Sections. Track Material is quoted 2.40c. to 2.50c. for Angle Bars, and 2.65c to 2.70c. for Spikes.

Finished Iron and Steel.— The material for the Brooklyn Navy Yard work, about 2500 tons, has been placed with a mill in the Central West. Otherwise little has been done. The mills are still far behind in their deliveries. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 2.80c. to 3c., for Tank, 3c. to 3.10c. for Shell, 3.30c. to 3.40c. for Flange, 3.40c. to 3.55c for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3.15c. for C. H. No. 1, 3.65c. for Flange and 4.15c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 2c. to 2.10c., on dock. Soft Steel Bars, 2.50c. to 2.55c.; Hoops, 2.70c. to 2.75c., base, delivered.

Merchant Pipe.— Quotations on Merchant Pipe in carloads are 50, 10 and 10 per cent. discount, delivered and in less than carloads 50 and 10 per cent., f.o.b. maker's mill. On Casing the figures are: For carload lots, S. and S. Joint, 37½ per cent., Inserted Joint, 32½ per cent.; for less than carload lots, S. and S. Joint, 32½ per cent., and for Inserted Joint, 27½ per cent., less 5 per cent. to jobbers, the prices for carload lots being delivered and for less than carload lots f.o.b. mill. On Boiler Tubes, 1¾ to 2½ inch, the prices are 55 per cent. off on Steel and 50 per cent. on Iron; for Boiler Tubes 2¾-inch and larger, 55 per cent. on Steel and 52½ per cent. on Iron, all subject to 5 per cent. on car lots, the prices for carload lots being delivered and on less than carload lots f.o.b. mill.

Metal Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, November 22, 1899.

Pig Tin.—While this article is noted for its ups and downs and wild European fluctuations, the course of prices throughout the last week has been most erratic. The market fluctuated from £3 to £12 in London, where speculation is as active as ever. Here the wild fluctuations interfere with the small business for consumption that is going through from day to day. At the close to-day our market was dull at 28c. to 28¼c. for spot and this month. December and January are at a discount of nearly 1 cent per pound. The London market closed to-day at £128 for spot and £127 15s. for three months' futures, with an easy tendency reported.

Copper. — There has been no change in the actual condition of the market. There has been no demand during the last week to speak of, but certain reports and the condition in London have tended to slightly strengthen the tone of the market. Lake is quoted 17c. to 17¼c. Electrolytic Cakes, Wire Bars, Ingots and casting stock are quoted 16⅞c. to 17c. A report which was circulated very freely yesterday announced that the Calumet & Hecla interests had advanced their price to 17½c. This report lacks confirmation, and in fact we understand from well informed parties that the rumor is absolutely without foundation. It is said that the parties referred

to are now out of the market, having sold this year's product well ahead. The London market has advanced considerably, but especially for spot, which is to-day quoted £75 15s., while futures show the wide discount of £2, closing to-day at £73 15c. Best Selected is unchanged at £78 15s.

Pig Lead.—At this writing the market is steady to firm for spot and nearby, with spot and November selling at 4.60c. to 4.65c. December is quoted 4.57½c. to 4.62½c. St. Louis is quoted firm at 4.47½c. to 4.50c., according to quality. We have heard of no change in the prices of the American Smelting & Refining Company, which are 4.57½c. to 4.60c. for spot, desilverized, New York, and 4.50c., St. Louis. It was reported that the St. Joseph, Desloge and Central lead companies had consolidated. Officers of these concerns deny the report. Information which we have from other sources shows also that the reports are without foundation. London advanced 10 shillings during the week, and comes at the close to-day £17 10s.

Spelter — Has experienced another sharp decline, and is freely offered to-day at 4.50c. for spot and this month. Bids do not exceed 4.40c. December delivery is offered at 4.45c., with no more than 4.35c. bid. St. Louis is reported down to 4.15c. to 4.20c. It sold in Pittsburgh, Pa., yesterday at 4.35c. The Ore market is down to $32 per ton for best grades, with a tendency toward lower prices. London is down to £20 11s. 3d., and the position is very weak.

Antimony — Is without change. Cookson's is quoted 10½c. to 11c., and Hallett's, 9¾c.

Nickel — Is strong and stationary at the advanced price of 40c. to 45c., according to quantity and delivery.

Aluminum.—This metal has been advanced, and Ingot material is quoted 33c. for lots larger than 2000 lbs., while smaller quantities are quoted 35c. to 37c., according to quantity and delivery.

Tin Plates.—Outside lots that have been in the market lately are said to have been disposed of. This gives a firmer tone to the market, and it is said that the price quoted by the American Tin Plate Company is now $4.84 per box of 100-lb. Cokes, New York delivery.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total U. S. product.	Product foreign mines.	U. S. exports.
First half 1895....	70,612	9,100	79,712	42,484	34,215
Second half 1895..	84,885	6,600	91,485	43,674	30,507
Total 1895.....	155,497	15,700	171,197	86,178	64,722
First half 1896....	94,180	7,200	101,380	42,255	58,216
Second half 1896..	95,314	7,200	102,514	43,941	67,287
Total 1896.....	199,494	14,400	203,894	86,196	125,503
First half 1897....	103,651	5,000	108,651	44,268	64,870
Second half 1897..	100,555	6,900	107,455	44,007	64,340
Total 1897.....	204,206	11,900	216,106	88,270	129,210
First half 1898....	112,687	7,800	120,487	40,880	68,284
Second half 1898..	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84,554	145,115
First half 1899....	111,967	12,500	124,487	43,629	56,460
July, 1899.....	18,533	2,800	21,333	7,390	7,160
August.....	19,886	2,800	22,686	7,292	10,920
September.....	19,515	3,200	22.715	7,839	7,553
October.....	20,680	3,300	23,980	7,834	11,360

The Troy Sale. — We are advised by the best of authority that the negotiations which have been pending for some time between the American Steel & Wire Company and the Troy Steel Company of Troy, N. Y., have been practically abandoned. This disposes of the statement in the daily press within the last few days that the sale had been consummated, the price named being $2,000,000. The plant of the Troy Steel Company consists of three blast furnaces and a basic Bessemer steel plant. It is understood that the Standard Oil interests have been considering the question of starting the works for the purpose of making steel for skelp.

The high price of steel sheet bars is driving many sheet manufacturers back to first principles, and more than one mill is advertising iron sheets as a desirable specialty for roofing, corrugated sheets and other purposes. It is also noted on good authority that several sheet mill owners who do not possess bar mills, scrap furnaces, steam hammers, &c., are considering the advisability of building a union plant at some convenient point to supply the requirements of their various mills. Some of the best galvanized sheets England has ever produced were made from hammered piles rolled into sheet bars. This practice almost ceased with low priced Bessemer steel, but under present conditions there seems to be no alternative and manufacturers must resort to old, well tried methods.

American Society of Mechanical Engineers.

The annual convention of the American Society of Mechanical Engineers will be held at the house of the society, 12 West Thirty-first street, New York, December 5 to 8. There will be a report of the Committee on the Revision of the Society Code of 1885, relative to a standard method of conducting steam boiler trials. The following papers will be read: "The Steam Engine at the End of the Nineteenth Century," by R. H. Thurston; "The Berthier Method of Coal Calorimetry," by C. V. Kerr; "Test of Two Pumping Engines at the St. Louis Water Works," by J. A. Laird; "New Graphic Method of Constructing the Entropy Temperature Diagram of a Gas or Oil Engine," by H. T. Eddy; "Pressure in Pipe Due to Stoppage of Flowing Liquid," by Geo. M. Peek; "Liquefaction of Gases," by A. L. Rice; "Curved Glass Blue Print Machine," by P. M. Chamberlain; "A Metal Dynagraph," by P. M. Chamberlain; "Education of Machinists, Foremen and Mechanical Engineers," by M. P. Higgins; "Experiment on Using Gasoline Gas for Boiler Heating," by Herman Poole; "Friction of Steam Packings," by C. H. Benjamin; "Friction Tests of a Locomotive Slide Valve," by F. C. Wagner; "Note on Fly Wheel Design," by A. J. Frith; "A Broken Fly Wheel and How it Was Repaired," by James McBride; "Efficiency Test of a 125 Horse-power Gas Engine," by C. H. Robertson; "Strength of Steel Balls," by J. F. W. Harris; "Colors of Heated Steel at Different Temperatures," by M. White and F. W. Taylor; "Impact," by W. J. Keep; "The Southern Terminal at Boston," by H. J. Conant; "High Hydrostatic Pressures and Their Application to Compressing Liquids," and "A New Form of Pressure Gauge," by F. H. Stillman; "The Value of a Horse-power," by G. I. Rockwood.

A Weather Bureau Exhibit at Paris.

It has been decided by the United States Government to keep American visitors at the Paris Exposition in 1900 informed as to the conditions of the weather in this country during the exposition period and at the request of Commissioner General Peck the Weather Bureau Department at Washington will make an exhibit at the exposition. Willis Moore, chief of the Weather Bureau, has given orders for the preparation of a special exhibit of his department to be shipped to the Paris Exposition. Prof. C. F. Marvin, chief of the instrument division, has been assigned by Chief Moore to attend to the packing of the exhibit. The value of the instruments to be sent to Paris and the cost of packing and exhibiting them will amount to about $10,000.

A thorough demonstration of the system will be given for the benefit of foreigners as well as Americans. The Weather Bureau Building at the exposition will have among other things a complete set of instruments such as are found at every weather station in this country. The workings of the forecasting division will be demonstrated, and to do this fictitious reports will be made out, from which a prognostication will be made in the regular way.

Each of the standard instruments now in use in the bureau will be exhibited and its workings explained. The quadruple register, an invention resulting from years of experience of the employees of the instrument division, which records the velocity of the wind, its direction, the duration of sunshine and rain fall, will be exhibited. None of the European Governments has anything like it. In order to show a machine which records a rainfall artificial rain will be produced. The thermograph, which registers the pressure of the atmosphere, will be shown, as well as all the instruments in common use.

An apparatus employed at lake and coast stations to display storm signals will be set up, as will a collection of maps indicating special or peculiar climatic conditions found in the United States. A large number of photographs will also be displayed. The different types of kites used by the bureau for scientific researches will be on exhibition, as will also a kite meteorograph, a delicate bit of mechanism invented by Professor Marvin for determining the humidity, pressure and temperature of the air and the velocity of the wind.

Professor Marvin expects to be ready to ship a portion of the exhibit in January, when the United States steamship "Prairie" will sail on one of her trips to Paris. Unless unforeseen circumstances arise the exhibit will be ready at the opening of the exposition. Three or four of the Weather Bureau scientists will act as assistants to Professor Marvin.

The Wellman-Seaver Engineering Company of Cleveland, Ohio, and Thomas Rodd of Pittsburgh, have been appointed engineers and architects for the new steel casting works which the Westinghouse Machine Company are to build.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING NOVEMBER 22 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
$29,000,000	Am. Car & Foundry, Common..	2,335	17¼-17⅛	-17	17 -17⅛	-17	-17	17 -17¼
29,000,000	Am. Car & F'y, Pref.(7% Non-Cu.)	1,512	61⅞ 62¾	-62¼	.....	62 -62⅛	-62	.....
19,000,000	Am. Steel Hoop, Common.....	16,565	43¼-44	43¾-45	45 -45⅝	44½-46	42½-45¾	45 -46
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.).	4,470	82½-88	83 -83¼	-84	83¼-84	82½-83½	-83¼
50,000,000	Am. S. & W., Common.....	31,315	48⅛-48⅝	48¼-49⅛	48¼-49¼	47¾-49⅝	48¼ 48¾	48¼-49
40,000,000	Am. S. & W., Pref. (7 % Cu.)....	1,810	94½ 94⅝	95 -95¼	-95¼	.....	.....	.....
28,000,000	Am. Tin Plate, Common, N. Y..	3,770	32⅝-33	-33⅞	34 -34⅞	34½-35	33¾-34⅛	34¼-34⅝
18,000,000	Am.Tin Plate, Pref.,N.Y.(7% Cu.)	695	-83	.....	.....	.....	-83	83⅛-84
7,500,000	Bethlehem Iron+.....	507	.....	-59½	-60	-60	-59¼	-60
15,000,000	Beth. Steel, Par $50, $1 paid in.	1,356	19⅝-19½	19¼-19⅜	-19¼	19¾-19⅞	-19⅝	-19
7,974,550	Cambria Iron, Phila*.....	29	-44	.....	.....	44⅛-44⅝	-44⅛	.....
16,000,000	Cambria, Steel**.....	5,841	20⅝-20¾	20¼-20¼	-20⅝	20 -20⅜	20⅛-20¼	-20⅛
11,000,000	Col. Fuel and Iron.....	13,685	52⅝-53½	52⅛-53⅛	52⅞-53¼	52½-53¼	-53	-52¼
46,484,300	Federal Steel, Common.....	83,040	57 -58⅛	57⅝-59¼	58⅛-59	57⅛-59⅛	58 -58¾	58 -58⅝
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)	11,600	78⅛-79⅛	-79⅝	80¾-81¼	80⅝-81⅝	80¼-80⅞	80⅝-80¾
32,000,000	National Steel, Common, N. Y .	3,940	47⅛-48⅛	48⅝-48¾	48¾-48⅞	48¼-49	46⅞-48	.....
27,000,000	Nat'l Steel, Pref., N. Y., (7% Cu.)	2,215	-95	-95	-95	95 -95¼	-95	-95
5,000,000	Penna., Common, Phila.....	50	.....	.....	.....	75 -77	.....	.....
1,500,000	Penna., Pref., Phila.....	.....	.....	.....	.....	.....	.....	.....
12,500,000	Pressed Steel, Common.....	2,550	36¼-36½	57¼-58¼	-58	57 -57¾	57 -57¼	.....
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	1,4 7	89 -89¼	88¾-89¼	-89¼	-89¼	.....	-89¼
27,352,000	Republic Iron & Steel, Common.	4,975	-24	24 -24¼	24⅞-25⅛	-24⅝	24¾-25	24⅝-24⅞
20,852,000	Repub. Iron & Steel, Pref. (7% Cu.)	3,679	70 -70¼	-70⅝	70⅝-71	71 -71⅝	70 -70⅝	69½-70¼
20,000,000	Tennessee Coal and Iron.....	12,490	115½-117	116¼-116⅞	114¾-116	113 -115	113¼-114	111½-113¾
1,500,000	Warwick Iron & Steel, (par $10)	163	-10⅜	-10⅜	.....	.....	.....	-10⅜

*Par $50. **$1.50 per share paid in. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph

Bonded Indebtedness: Am. S. & W., $130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $13,300,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D & I R. R. R. 6 %, $10,000 land grant D. & I R. R. R. 5 %; National Steel, $2,561,000 6 %; Tennessee C. I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 Steelton 1st; $2,000,000 Sparrow's Point 1st, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co.: Col. Fuel Co. Gen Mort 6 % $880,000; Col. Coal & Iron Con. Mort. 6 % $2,810,000; Col. Fuel & Iron Gen. Mort. 5 % $2,306,000. Also outstanding $2,000,000 preferred stock with accumulated dividends of $640,000 to June 30, 1899.

Iron and Industrial Stocks.

Generally speaking the movement in the steel stocks has been rather light, and fluctuations, with some exceptions, have been within a comparatively narrow range. The most conspicuous decline during the week has been that of the Tennessee stock, which sold down to 111½, in the face of much talk that the stock is to show a final approach to 200. The sales of American Steel & Wire preferred have been unusually light, two days having passed without a single transaction.

	Bid.	Asked.
International Silver, Common	13¾	14½
Otis Elevator, Common	29	30
Otis Elevator, Preferred	92	94
H. R. Worthington, Preferred	109	110
Cramp's Shipyard Stock	68	78
Pratt & Whitney, Common	3½	5
Pratt & Whitney, Preferred	50	54
E. W. Bliss, Common	132	...
E. W. Bliss, Preferred	125	...
U. S. Projectile	95	100
Barney & Smith Car, Common	21	25
Barney & Smith Car, Preferred	94	100
International Pump, Common	18	20
International Pump, Preferred	67	70
Diamond State Steel	6	6½
Tidewater Steel	13¾	14¾
Sloss & Sheffield Steel & Iron, Common	35	36
Sloss & Sheffield Steel & Iron, Preferred	73	76
National Tube, Subscriptions, Common	45	46
National Tube, Subscriptions, Preferred	94	96
American Bicycle Company, Common	25	27
American Bicycle Company, Preferred	65	67
American Bicycle Company, Bonds	90	91

The Bethlehem Steel Company have declared a dividend of 50 cents per share, payable December 1.

The negotiable receipts for 50,000 additional shares of stock of the Warwick Iron & Steel Company, $2 paid, have been listed on the Philadelphia Stock Exchange. The additional amount up to the par value of $10 per share is to be paid in instalments, as follows: $2 per share on or before February 15, 1900; $2 by May 15, 1900; $2 by August 15, 1900; $2 by November 15, 1900. Interest at 4 per cent. per annum will be allowed on amounts paid until the date of issue of certificates.

The National Tube Company have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable January 2 next. Books close December 15 and open January 4.

Professor Dewar has now succeeded in solidifying hydrogen, thereby obtaining a temperature only 14 to 15 degrees above the absolute zero. The melting temperature of solid hydrogen is about 16 degrees, and by evaporating it he obtained a temperature a few degrees lower. Solid hydrogen seems to be a transparent ice, and not a metal as was heretofore supposed.

There is talk of a new 48-inch water main from the Millburn pumping station to Spring Creek, Brooklyn. It will cost about $1,000,000. Additional pumping engines and a new coal shed to cost $160,000 may also be built.

Electrically Driven Auxiliaries on War Ships.

In his last annual report as chief of the Bureau of Steam Engineering, G. W. Melville says: For some time past—in fact, ever since the successful use of electric motors for general power purposes on shore—the Bureau has been carefully investigating their adaptability to the driving of the numerous auxiliary engines on board ship, and, in view of the conclusion that the electric drive of the auxiliaries would not, under existing conditions, be so satisfactory and economical, on the whole, as the steam drive, believes it would be of interest to state the reasons for this conclusion.

This is the more appropriate because in some quarters the fact that electric motors are extensively used on shore has led to the belief that they would be equally successful on board ship. The Bureau has planned to use electric motors exclusively in its new plant at the Brooklyn Navy Yard, and it will be readily appreciated, therefore, that their non-use on board ship is for very good reasons.

The advantages claimed for electric motors over small steam engines on board ship may be classed as greater ease of operation, avoidance of heat, which accompanies the use of steam pipes in living places, and much greater economy. Against these, however, are to be put the much greater weight of the necessary electric outfit, the greater delicacy of the type of electric motors ordinarily used, the lack of ready adaptability to the various conditions of service, a general denial of the claims for economy as ordinarily presented, and the increase in the amount of space required below the protective deck for the installation of the necessary dynamo rooms, this space being necessarily taken from coal bunkers.

On board ship, where excess of weight is so carefully guarded against, it would certainly be very unwise to adopt a change of motive power involving great increase in weight, unless the advantages gained are very material. It must always be remembered that, speaking generally, on board ship the use of an electric motor involves a total weight for the motive power at least three times that of the motor itself, because there is always the generator and its driving engines, besides the motors supplied by them; or, in other words, the electric drive of an auxiliary will weigh at least three times as much as the steam drive, assuming the motor to weigh no more than the engine it displaces, although usually it does weigh more. The answer which would be made to this is, of course, very familiar to anybody who has studied the problem—viz., that the auxiliaries are not all in use at one time, and that therefore the generator capacity required is considerably less than the total motor capacity. This is another case where a statement which may be true elsewhere is not true for the circumstances on board ship. Our naval machinery has to be designed so that in time of action everything can be ready for use, and, as a matter of fact, a very little study of the question will show that it not only may, but almost certainly would happen that every auxiliary on the ship, except the capstan engine and some of the

boat winches, would be used simultaneously. Therefore this statement with regard to the generator capacity does not hold on board ship.

Another statement to which very emphatic objection must be entered is in respect to the enormous gain in economy claimed for the electric drive of the auxiliaries, which is obtained by taking the highest figure for the efficiency of the generator and motor and also the most economical steam engine, and by comparing these results with the uneconomical form of steam cylinders which, for very good reasons, have until recently ordinarily been used with the steam driven auxiliaries. If the electric generator was of relatively large size and the motors worked always at their most economical speed and load there might be some justification for this claim; but, as a matter of fact, the very circumstances under which the auxiliaries on board ship are worked require a very wide range of speed and power, and I believe that electric experts admit that electric motors as at present designed when run under these conditions are by no means economical, so that, without considering the economy of the engine driving the electric generator, the economy of motor driven auxiliaries at speeds differing materially from the most economical would be widely different from those which are set forth by the advocates of their universal use on board ship. The natural result of the foregoing is that, with the widely varying speeds of the auxiliary machinery, there is required at the generator the development of an almost constant power which is very near the maximum, and which depends only upon the number of auxiliaries in use.

I wish to emphasize the point that the objection to using electric motors for driving the auxiliaries on board ship is not an objection to the use of electric motors *per se*, but to installing them in a location for which they are not adapted and where their good features cannot be utilized. What has led to the wide use of electric motors on shore is not only the absence of heat, cleanliness and ease of installation and operation, but above all the simplicity of the transmission of power from a central station to a distance. Now the great majority of the auxiliaries on board ship are so near the boilers that less piping is involved in a direct steam drive than in an electric drive from dynamos necessarily at some distance from the boilers.

The ease of transmitting power to a distance over a wire, as compared with great lengths of steam piping, gives the electric drive a very attractive side, even for distances no greater than the maximum ones on board ship, so that we should naturally expect to find electrically driven captans and steering engines. These two auxiliaries are not under this Bureau, but are the ones requiring long and and objectionable steam pipes through the living spaces. Here, however, another point has been made by some who are very anxious to use motors elsewhere—viz., that for the service in these cases motors are not sufficiently reliable. Naturally a system involving four parts, each liable to break down, is more delicate than one involving but two of these parts. With a steam drive there are the boilers and the steam engine driving the auxiliaries. In the electric drive we have the boilers, the steam engines, and also the electric generators and motors. It is merely a detail whether the steam engines operate the auxiliaries directly or whether a smaller number of them, having a greater power in each engine, operate electric dynamos. Personally I should think, however, that if motors are considered sufficiently reliable to drive feed pumps and air pumps on shipboard, for which they are not well adapted, they would be reliable for these other two cases noted, which they fit so well otherwise. The absurdity of an electric drive of auxiliary machinery on board ship situated closer to the main engines than the engines driving the dynamos becomes all the more apparent when contrasted with the steam drive for auxiliaries situated in the very extreme ends of the ship.

The fact is that within what are ordinarily called the "machinery compartments of the ship" the leading of the necessary steam and exhaust pipes for auxiliaries does not interfere with anybody's comfort nor does it raise the temperature unduly, and the distances are so short as to make the lead of piping very easy. Steam auxiliaries answer admirably the demands which come upon them at all speeds within their capacity, and the only possible objection which can be urged against them is that the simple forms usually employed for reliability are not so economical as the more elaborate ones which can be used elsewhere. They are far superior to electric motors on the score of adaptation to the service to be performed, and also far better for naval use on the score of weight. On the score of economy, we have shown above that the claims ordinarily made for the electric drive are not tenable, except under special conditions, and it is further to be said for the steam driven auxiliaries that at the times when economy is of the greatest importance when making long sea trips only a small part of the total auxiliary capacity is used, so that even if the saving by the use of electricity was what is claimed by the most enthusiastic electrical agents the aggregate amount of fuel saved would be camparatively insignificant and considerably less than the reduction in bunker capacity necessarily incident in a ship of a given size to the use of the electric drive.

It must also be noted that all the published statements of the superior economy of electrically operated auxiliaries are based on steam auxiliaries where every steam cylinder was of the least economical kind, and where, for good reasons, well-known measures of economy had not been installed. An inspection of the Bureau's recent designs will show that by the use of compound engines as motors, feed heaters for the exhaust, the use of the exhaust steam from the auxiliaries in the receivers of the main engines, and other economical devices, the expenditure of steam in the auxiliaries is brought much below that of the old simple engines, and indeed below that of the electric drive except under very favorable conditions, while avoiding the increased complication and weight which necessarily accompany electrically driven auxiliaries on board ship. I may be permitted to call attention in this connection to the fact that those designers abroad who have the most extended experience are working on this problem of the economy of auxiliaries along the same lines that the Bureau has been following. Although the statement is very often made that the electric drive of the auxiliaries is being rapidly adopted in all foreign navies, this is far from accurate. It is being tried on some ships in some navies, but is as yet entirely in the experimental stage. These experiments have been carried quite as far in our navy as in any other. I think I may be pardoned for saying that those who are most insistent on the electric drive are not at all conversant with the conditions obtaining on board ship, while those of us who have spent a lifetime in the care and design of naval machinery may fairly claim that we know something about what is needed. It is perfectly safe to say that when electric machinery can be used more advantageously than steam for driving ships' auxiliaries the change will be made very promptly. Knowing, as they do, that as at present designed electric machinery, however good elsewhere, is not yet adapted to driving the auxiliaries on board ship, the Bureau chiefs would be incompetent if they yielded to the craze for new things and made a change which would result in increase of weight and complication, lack of economy, dissatisfaction and the decreased efficiency of the fleet.

The General Electric Company are furnishing the Union Carbide Company of Niagara Falls, N. Y., with seven transformers of 2500 horse-power capacity each, at a frequency of 25 cycles, a primary voltage of 11,000 and a secondary of 2200. These transformers are, it is understood, by far the largest that have ever been built, the next size smaller being only one-half the capacity—namely, 1250 horse-power. The total weight of each transformer is 50,000 pounds. About 12½ tons of sheet iron are used in the cores. The coils of the transformers are 6½ feet long by 4 feet wide.

The George Burnham Company, Frank Reed, proprietor, Worcester, Mass., makers of drills and planer chucks, have recently increased their productive capacity by the addition of new tools, to make room for which their office has been crowded out and removed to another part of the building, 21 Hermon street.

Reports have been current that the burned parts of the wire mill at Waukegan, Ill., might not be rebuilt. We are advised that the American Steel & Wire Company are now making contracts for the replacement of the destroyed plant.

The officers and civilian assistants, under the cognizance of the Bureau of Steam Engineering, tested, inspected and shipped for the Bureau of Yards and Docks 4,679,296 pounds of structural material, plate, angles, shapes and rivets, also the structural work of putting together this material; for the Bureau of Equipment, 503,233 pounds of structural material, anchors and their fittings; for the Bureau of Construction and Repair, 1978 pounds of castings; for the Fish Commission, 102,864 pounds of boiler material, and for work coming under its own cognizance, 5,299,800 pounds of steel forgings, steel castings, steel plates, boiler bracings, steel and iron rivets, steel and iron bolts and nuts, steel and iron boiler tubes, steel and iron steam and water pipe, condenser tubes, brass and copper pipe and sheets, finished corrugated furnaces, steam drums for tubular boilers, and other finished articles in brass, copper, steel and iron, the grand total successfully passing inspection being 10,587,175 pounds.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, November 22, 1899.

Conditions of the local market have become quite stationary, and machinery merchants have accustomed themselves to working under high pressure. There are slight fluctuations in demand, but the lulls are not sufficient to really cause any marked deviation in the general condition of the market. That the pressure is higher is evinced by the fact that work is being turned down at first sight which but a few months ago would have been welcomed. The number of "big things" that are being held in abeyance is steadily being multiplied, but the numerous small orders that are coming from all quarters are sufficient to keep off that condition which the "big things" anticipate and for which their promoters are waiting. All large projects requiring a considerable quantity of machinery are not being held back in anticipation of a lower level of prices, by any means, but it is a fact that a number of good, heavy inquiries are taking a long while to materialize. Where unusually large amounts are involved there seems to be a noticeable hesitancy on the part of the projector. A large proportion of the very concerns who are running night and day and are "booked" six months ahead don't seem to think that this is just the time to increase their facilities sufficiently to cope with the work and abandon expensive night work. An exception to this is found, however, in the case of Fraser & Chalmers of Chicago, who are preparing for a very large extension to their plant. Within the week under review this company ordered a large proportion, if not the entire equipment, of machine tools required from the Niles-Bement-Pond Company. The tools, we understand, run principally in the very heavy classes.

Another instance is found in the Goulds Mfg. Company of Seneca Falls, N. Y., who, we are reliably informed, have commenced on extensive additions to their plant. It is said that this company have just purchased 10 acres of land adjoining their present plant. The plans for the new buildings to be erected call for a new machine shop 285 x 100 feet, foundry 122 x 85 feet, boiler house 67 x 44 feet, pattern warehouse 78 x 30 feet, and buildings for the storage of material required in connection with the plant. The machine shop and foundry buildings will be equipped with improved machinery for the building of large triplex pumps for water works, mining and other purposes. It is said that the buildings will cost between $50,000 and $60,000.

We have heard of but two changes in prices which were put into effect during the last week. Both the Putnam Machine Company and Prentiss Brothers of Worcester have stiffened up their list a little more.

It is quite possible that the awards will soon be made by the Navy Department for the machinery to be installed in the new machine shop at the Brooklyn Navy Yard. We are informed that the bids are now being tabulated at Washington, and that in about a week they will be ready for the supervision of Chief Engineer J. A. B. Smith. Commodore Smith is keeping in close touch with the authorities at Washington regarding this work. Although almost a year is allowed the bidders in which to make deliveries, the work cannot be pushed owing to the slow progress being made on the buildings. The efficient arrangement of the existing temporary machine shops at the Navy Yard enables the Engineering Department to cope successfully with the work which is at present coming in to the department.

Work is progressing rapidly on the building for the central power station which is being erected at the Brooklyn Navy Yard. One end of this building is being left open in anticipation of a special appropriation for an enlargement of the building. It is said that in the President's message to the next Congress an appropriation will be requested for the installation of a large pumping station. These pumps will be erected in the anticipated addition to the power house. The pumps will be used in connection with a salt water fire extinguishing system. At present the 6-inch mains which supply the water in case of fire are fed by the Brooklyn Water Department. These mains have been proven entirely inadequate. The new plan provides 10-inch mains with the East River as source of supply. The high service pumping plant will obviate dependence upon the Brooklyn Fire Department.

We are officially informed of the fact that at the meeting of the Board of Directors of the Niles-Bement-Pond Company, which was held last Tuesday, Frederick B. Niles was elected vice-president of the company.

Rudolph Hirsch and Theodore Stapf, managers respectively of the bolt and nut works and steel works of Richard Von Schoeller & Co., Austria, have just concluded a visit to industrial plants in this country. In company with F. A. Gottlieb of 133 Liberty street, these gentlemen investigated American methods, and just before their departure for Europe they expressed most profound astonishment at the progress made by American mechanics since their previous visit. The main office of Von Schoeller & Co. is located at Hirschwang, N. O., Austria. The company intend to add rather extensively to their bolt and nut works, which are located at Neunkirchen, and their steel works, which are at Ternitz. A considerable quantity of trade literature and data was collected by Messrs. Hirsch & Stapf, and it is expected that some good orders will be forthcoming shortly after their arrival in Austria.

Inquiries are being circulated by the Edison Portland Cement Company for 700 horse-power of dynamos ranging from 3 to 50 horse-power each. It will be recalled that this company are purchasing an equipment for a large cement plant which they will erect in Pennsylvania. We have not heard that they have closed on the list of machinery on which they received bids recently. W. S. Mallory, who is at the laboratory of Thomas A. Edison, Orange, N. J., is in charge of the work.

It is said in the street that an entire new plant will be built at Allentown, Pa., by the Medvale Foundry Company of that city. E. E. Weaver, who is the head of the Medvale Company, was for some time president of the Central Foundry Company of Allentown. We are informed that the new concern are now negotiating for the purchase of machinery and necessary equipment.

The American Trading Company of 100 William street are ordering the equipment for the first modern paper mill to be erected in China. The mill will be built at Shanghai by the Shanghai Pulp & Paper Company. The American Trading Company are the American representatives of the Shanghai Company. Orders have just been placed by this company with the New Haven Mfg. Company of New Haven, Conn., and the W. F. & J. F. Barnes Company for machine tools for the repair shops which will be operated in connection with the plant. A four-cylinder triple expansion 500 horse-power engine has been ordered from Lane & Bodley of Cincinnati. The American Fire Engine Company have received an order for three single cylinder vertical 100 horse-power engines. Four centrifugal pumps have been ordered from the Lawrence Machine Company of Lawrence, Mass., and 39 and 41 Cortlandt street. Two 98-inch paper machines have been ordered from the Beloit Iron Works of Beloit, Wis. Other paper machinery has been ordered from the Siebold Machine Company of Dayton, Ohio. It is probable that water tube boilers will be ordered. Fuel economizers are also still to be purchased. The equipment will cost upward of $100,000. The Shanghai Company have been incorporated, with a capital of $200,000.

The American Trading Company have just placed a large order with the Ingersoll-Sergeant Drill Company for rock drills and air compressors to be used in Northern China.

The Heine Safety Boiler Company of 11 Broadway have just received another order from the East Jersey Water Company for boilers to be installed in the new water works plant now being erected at Little Falls, N. J. This makes the total installation of Heine boilers in this plant 1250 horse-power. An order for a 1000 horse-power street railway plant has also been received by the Heine Company.

The Gates Iron Works of 11 Broadway have just received the contract for four crushers, screens and elevators to be used in remodeling the ballast plants of the Baltimore & Ohio Railroad. The plants are located at Wooddale, Del.; Kearneysville, W. Va.; Buckhorn, W. Va., and Connellsville, Pa. The Southern Pacific Railroad have also ordered a crusher plant from the Gates Iron Works to be erected in San Francisco.

The contract for the boilers to be used in connection with the two new dredges to be used in New York Harbor was awarded to the Roberts Safety Water Tube Boiler Company of Red Bnak, N. J. The boilers will be of 1000 horse-power each. The Osgood Dredge Company of Albany are furnishing the balance of the requisite machinery. Hewes Brothers & Bangs are the contractors to whom the entire work was awarded.

The Newburgh Ice Machine & Engine Company, whose offices are at 39 and 41 Cortlandt street, have just been awarded a contract for a 210-ton ice making plant to be erected at Progresso, Yucatan.

Rossiter, MacGovern & Co., whose New York offices are located at 141 Broadway, have purchased the entire plant of the Excelsior Electric Company of Brooklyn, N. Y., together with all tools and equipment. They have added considerable new machinery and rearranged the shop for turning out electrical machinery of large capacity. This company purchase old engines, generators, dynamos, &c., rebuild them and then place them on the market again thoroughly overhauled.

Catalogues Wanted —The Vulcan Iron Company of Winnipeg, Manitoba, makers of boilers, engines, elevator and mill machinery, who are about to make improvements in their shops in the spring, desire catalogues of makers of machinery.

The Philadelphia Machinery Market.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., November 20, 1899.

There is not the slightest change noticeable in the condition of the market. The situation is as strong as ever, and there is nothing in the outlook of a disturbing character. It seems to be generally conceded that the present activity in the trade will continue throughout next year, and the question of deliveries is one occupying the serious attention of prospective buyers. The work now in hand in the various shops is very heavy, and it is safe to say that the business booked could not be entirely cleaned up within a year. Consequently it cannot be expected that deliveries during 1900 will be any better, and the probability is that they will be even more extended.

There are plenty of inquiries in the market just now, some covering very large transactions. In many cases the deliveries specified run well into the middle of next year. Some little hesitancy is noticeable on the part of foreign buyers in the placing of orders on account of an expressed fear that they will not be able to get satisfactory deliveries. Several of these buyers now are here to ascertain the exact condition of affairs, and to secure any advantage they can in the placing of business. It is expected that the Paris Exposition will result in a great many large orders being taken by American machinery builders, and as buyers begin to realize the possibility of an extraordinary amount of business accruing on the books of machine builders during the second half of next year there will undoubtedly be somewhat of a rush to place orders for machinery required during that period and the first half of 1901.

European buyers are bringing reports of recent heavy declines in the industrial stocks of France and Germany, and a consequent falling off in the demand for machinery. It is worthy of note, however, that the more prominent builders in this market report within the last two weeks a larger number of inquires from those countries than they have received for some time past.

A good deal of activity is noticeable in wood working machinery circles, and builders say they have not experienced such a good demand for machinery for some years.

Iron and steel foundries are overflowing with work, and the difficulty experienced in getting castings is keeping back a great deal of work in machine shops. Iron founders complain very much of the scarcity of skilled molders, and give this as one of the reasons for slow fulfillment of orders.

While there is some little disappointment expressed by a few of the exhibitors at the National Export Exposition in regard to returns, on the whole the exhibitors of machinery appear to be satisfied with the results. Such exhibitors as did not wait for foreign visitors to hunt them up, but did the hunting themselves, are among the most successful. That the exposition brought a number of foreigners interested in machinery to Philadelphia is evidenced by the numbers visiting the different machinery building establishments in the city. The manager of one of the larger establishments building tools and appliances says that hardly a day has passed since the opening of the exposition without a call from a foreigner interested in their line, and on some days such visitors came in streams. As a result some good sales have been made, and a large number of estimates have been put out.

The Bement, Miles & Co. plant of the Niles-Pond-Bement Company is being run to the fullest extent of its capacity, and with the largest force of workmen ever employed there. It is reported at the works that there is every indication of a continuance of this state of affairs for some time to come. Orders from abroad are being booked continuously, and cover all classes of tools, from the smallest to the very largest. A good many orders have been received from the different steel works in the country, and there are in hand several large tools for the United States Government for installation in the various arsenals and ordnance shops.

Wm. Sellers & Co., Incorporated, report a heavy business at their works, every department of the plant being busily employed. Foreign business is keeping up nicely, and the inquiries from abroad have of late seemed to be more numerous than before.

Lucas & Gliem, builders of cold saw cutting off machines and machine tools, are finding their plant inadequate for the business they are doing, and are looking around for a new location. They are considerably hampered for want of room at their present works, but are keeping up with their contracts as regards deliveries pretty well. They are daily in receipt of inquiries for their cold saws, particularly for a machine after the style of their Universal, recently illustrated in *The Iron Age*. Proprietors of machine shops, they say, are waking up to the fact that a cold saw cutting off machine is an advantage in any machine shop, and a tool which effects savings sufficient to pay for itself in a short time is a good investment in times like these. Among their recent shipments they mention one covering a portable 40-inch stroke electrically driven butt slotting machine for Dick, Kerr & Co., London, England.

The Pedrick & Ayer Company, builders of pneumatic and hydraulic tools and appliances, are very busy, and have some very large orders in hand, including several from abroad. Among the latter is one, almost completed, covering a lot of riveters destined for Japan.

At the Newton Machine Tool Works there is considerable activity noticeable. The comparatively new plant is already too small to properly accommodate the large business done, and steps are being taken looking toward a removal of the plant to a more favorable location. An option has been secured on a large plot of ground at Nicetown, and it is quite probable that it will be decided upon for the new plant. Foreign business is reported to be quite good at the works. Among the foreign orders in course of completion is one for a 60-inch portable slotter to go to Germany; another for a similar machine, 40-inch, for the same destination; another for portable boring and milling machine and a portable drilling and milling machine, also to go to Germany; another for a portable boring and milling and portable drilling machine to go to Italy, and another for a portable floor boring machine to go to Spain.

The Southwark Foundry & Machine Company are very busy at their works, and are running overtime. They have a great many orders in hand for engines for electric lighting, and for blowing engines for furnaces. Among recent orders secured by the company are one from the Union Steel Company, Pittsburgh, Pa., for a Porter-Allen automatic cut off engine of 3500 horse-power, and a similar engine of 2000 horse-power.

The Pennsylvania Machinery Company have booked several nice orders during the month, among them one for a 25 horse-power and a 60 horse-power boiler to go to Sumter, S. C., and another for a 200 horse-power automatic engine from the Raleigh Coal & Coke Company, Raleigh, W. Va.

Business among the crane builders continues very active, and some large specifications have of late been in the market. A specification of large size at present going the rounds covers several electric cranes for the Carnegie Steel Company, some of them of 75 tons capacity. It is understood also that the New York Shipbuilding Company are about to place an order for eight large cranes.

Alfred Box & Co., builders of cranes and hoists, report the demand for their products as large as ever. Quite a number of orders have been booked during the month, particularly for hoists, some of the orders for which assume goodly proportions.

At the Philadelphia Engineering Works business is very active. Among the orders received is one from the National Gas & Construction Company, Greenville, S. C., for two 16 x 36 Corliss engines for an electric light plant, and another for a 12 and 20 x 36 cross compound air compresor for the Deutsche-Niles Werkzeug Maschinen Fabrik, Berlin. Other work in hand in the engine department includes a 16 x 28 x 24 cross compound condensing Corliss engine for the Barr Pumping Engine Works, Philadelphia. In their plate department they are building a large chimney 9 feet in diameter, 250 feet high, to go abroad. In the crane department business is very brisk. Among the orders recently booked is one from the International Steam Pump Company for a 15-ton electric crane for their Holly Mfg. Company branch. In the special machinery department the gun carriages which have been for some time in hand are approaching completion, and one of them will be shipped to the Government proving grounds at Sandy Hook in a few days. There is a good deal of blast furnace work and work of a miscellaneous character in hand in this department. Work was commenced this month on the extension to the buildings noted in a former report. Brick buildings, 28 feet high, one story, are being added to each end of the plate shop, making the enlarged shop about 360 x 50 feet. This shop will be used principally for cranes

and structural work. Two 15-ton electric traveling cranes are to be installed in it, with a full equipment of modern tools. Additional boilers and engines for the power equipment will be built in the works. Among the orders for equipment already placed are one for a bulldozer bending and shearing machine placed with the Pittsburgh Mfg. Company, and another for pneumatic tools placed with the Pneumatic Supply Company of New York.

The Harrison Safety Boiler Works continue very busy in all departments. Among recent orders received for Cochrane feed water heaters and purifiers are mentioned the following: Stein, Hirsh & Co., Hammond, Ind., 300 horse-power; Union Malleable Iron Company, Moline, Ill., 500 horse-power; Presbyterian Hospital, Philadelphia, 500 horse-power; Central Coke & Coal Company, Texarkana, Texas, 350 horse-power; E. E. Jackson Lumber Company, Riderville, Ala., 500 horse-power; Galena Light & Power Company, Galena, Kan., 425 horse-power; Siemens-Halske Electric Company, Grant Works, Ill., 150 horse-power; Indianapolis & Greenfield Rapid Transit Company, Greenfield, Ind., 1250 horse-power; Harbison & Walker Company, Pittsburgh, two 350 horse-power and one 250 horse-power; Buda Foundry & Mfg. Company, Harvey, Ill., 500 horse-power; American Cereal Company, Cedar Rapids, Iowa, 1000 horse-power; New York Steel & Wire Company, 2500 horse-power, and D. H. Redmond & Co., Philadelphia, 500 horse-power.

Morse, Williams & Co., elevator builders, are building alongside their present shops a new erecting shop, 50 x 130 feet. The building is a one-story structure with galleries. Some new equipment will be purchased for installation in the building, including an electric lighting and testing plant. The concern have recently taken a good many contracts for elevators, including one for two electric freight elevators for the new mechanical building of the Curtis Publishing Company, Philadelphia; another for a direct acting hydraulic freight elevator for the *Evening Telegraph* Building, Philadelphia; and another for an electric freight elevator and double geared electric elevator for heavy loads for the National Biscuit Company, Philadelphia. Quite a good demand is being experienced for the Hindley worm gearing made by the concern. This branch of the firm's business has grown to large proportions. Among the orders for the gears in course of completion is one for five sets to go to Ireland for installation in the Guinness Brewery at Dublin.

The Barr Pumping Engine Company have taken a number of orders during the month, for the most part covering small and medium pumps and underwriter pumps. Among the larger orders received is one from the New York Shipbuilding Company for two 14 and 20 x 4¼ x 18 hydraulic pressure pumps, and two 6 and 10 x 5¼ and 10 boiler feed pumps for their new plant.

The American Pulley Company have booked during the month a great many orders for their all wrought steel pulleys. Among the foreign shipments of the pulleys recently made one of 500 to London is noted. Work on the company's new plant at Nicetown is progressing satisfactorily, and preparations for a removal of their present plant will shortly commence.

The Wilbraham Baker Blower Company report a very good demand for their Green blowers and exhausters. The demand for their foundry blowers, both belt power, direct connected and electrically driven, is especially good, orders coming in from all parts of the country. The economical features of the Green machines are attractive to all concerns practicing economies in their equipments.

The Baldwin Locomotive Works continue very busy, with every department running to the fullest extent. They are about to make another big addition to their already immense plant by the erection of a six-story brick and iron building on the site of their present three-story foundry on Broad street. The new building will have a frontage of 207 feet on Broad street and extend back 75 feet on Pennsylvania avenue and Hamilton street. Work in the old foundry will not be stopped during the erection of the building.

J. F. McCloskey has a contract for the erection of a four-story addition to the morocco factory of C. J. Mathews, 40 x 80 feet. Some new machinery equipment is to be purchased for the building.

The Sloss-Sheffield Company.—The organization of the Sloss-Sheffield Iron & Steel Company has been completed by the election of the following permanent Board of Directors: Arthur Brown of Rogers, Brown & Co.; Joseph Bryan, president of the Richmond Locomotive Works, Richmond, Va.; W. H. Goadby of W. H. Goadby & Co., New York; Sol Haas of Birmingham, Ala.; A. H. Larkin, J. C. Maben, Richard Mortimer; Walter G. Oakman of the Guaranty Trust Company, Geo. Parsons, E. W. Rucker of Birmingham, Ala.; John A. Rutherford, Fred. W. Scott of Richmond; Wm. E. Strong of Strong, Sturgis & Co., Moses Taylor, R. B. Van Cortlandt of Kean, Van Cortlandt & Co. The officers of the Sloss Iron & Steel Company will continue as officers of the new company for the present at least. These are Sol Haas, president; E. W. Rucker, vice-president; R. W. McQueen, secretary and treasurer. C. H. Schooler is auditor. The Executive Committee consists of W. G. Oakman, Joseph Bryan, J. C. Maben, Sol Haas and R. B. Van Cortlandt. The headquarters of the new company will be at Birmingham, Ala.

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Michigan Mineral Report.

The fourth, and last, report of George A. Newett, Mineral Commissioner of Michigan, has been issued. Like all of Mr. Newett's prior publications, it is a very interesting document, especially so this year on account of the present activity in mining and the outlook for the future. The report deals with all the minerals mined in the State, iron, copper, gold and silver, and salt, coal, building stones, clays, kaolin, gypsum, marl, grindstones and slates. While the Mineral Commissioner is an official of the State, under salary, he is provided no fund for the publication of his report, and it so happens that the more he does the less will be his compensation, a condition of things that deserves a remedy, even were the report of less importance and value than it now is. Were a sum provided for printing an ample edition, and were there monies for the insertion of maps, &c., of the various mining districts, the expenditure would be wise.

Mr. Newett estimates the value of the State's mineral production of 1898 as $38,825,000, as follows:

Iron ore	$18,450,847
Copper	16,834,670
Salt	2,686,272
Other minerals and metals	1,853,211

This is $1,450,000 above the value for the preceding year, which was the largest up to that time. No estimate is made of the increase for 1899, but it is safe to figure it as tenfold more than for 1898. If all the iron ore raised in the State last year were made into one railway rail of ordinary section, that rail would encircle the globe one and a half times. If all the copper mined in the year were drawn into a No. 12 telephone wire it would wind 29 strands about the earth. If all the salt of the year was in barrels and then set on end touching each other, they would reach 1500 miles. Such illustrations are perhaps necessary to show the vastness of the industry. Dividends have been paid by the copper mines of the State from their start to the close of 1898 amounting to $82,251,875. Since then, by the way, they have added to this the further sum of $9,679,000. The iron ore mines of the State are now nearly all in the control of steel making companies, and at the close of the year they were employing more men than at any preceding period. The chief towns of the upper peninsula of Michigan derive their support almost entirely from mining, and in no other region is there a better class of labor, none of the old world districts being worthy of mention beside it. Sanitary conditions in these towns are unusually good, public schools rank with the best, banks carry large deposits of miners, who hold an unusual amount of stocks of dividend paying companies, the towns are modern and supplied with the best and latest conveniences, and as a rule the mining companies take great care of their employees, well or ill. The deepest mines in the world, the heaviest machinery, the most modern methods and the greatest enterprise are all found here.

While vast quantities of ores and metals have been taken from the ground in Northern Michigan there is a vaster quantity yet to be extracted than the present generation can secure. Michigan has still greater performances than yet achieved in the way of mineral production. There are yet hidden valuable deposits of ores and metals and stones. It will be producing gold and will furnish marble equal to the finest found anywhere. And on this item of marble, incidentally referred to in this report, your correspondent wishes to lay stress. In a few years the Northern Michigan marble deposits will give wealth to the State.

In the conducting of these mines of iron and copper the tendency is toward concentration, and the former at least will soon be controlled by a few firms. The great mines of iron are in the hands of the makers of steel, and the air is full of rumors as to the consolidation of copper interests, and it will be strange if some of these do not eventuate. Such combinations, Mr. Newett thinks, will be better for the mining companies and for the men they employ. Such would, indeed, seem to be the result, so far as present high pressure experiences can be taken as guides.

The report speaks at length of the new importance of the high phosphorus ores, the low grade limonites, the siliceous ores, &c., of which *The Iron Age* correspondence has fully treated from time to time. It notes in an interesting way the change in conditions of the year under review, and refers to the growth from one small range with an output of a million tons or so, which the mine owners doubted if they could sell, to five great ranges and a quickly sold production of 14,500,000 tons. Detailed reports of the individual properties, brought to the middle of 1899, form the bulk of the volume.

A most interesting feature is the report of new work in the copper districts of Onoonagon and Kewenaw counties, and especially of what has been accomplished at Arcadian Mine, Houghton County, in the year it has been under development. The world, says Mr. Newett, may take off its hat to the Arcadian management for hustling. A year has seen this property change from a deserted, brush covered prospect, a few old dwellings, a single shallow shaft, a force of 20 men, to a village of 100 houses and another 100 building, 13,000 feet of new drifting and nearly 3000 feet of shafts, of which six are being sunk, and a force of 1000 men, with steel buildings for headworks, crusher and stamp mills. The company are working 56 power drills underground, and as high as 130 feet of drifting has been made by a single machine and two men in one month, an almost unequaled performance. At one of the shaft houses there are solid masonry engine and compressor buildings, containing 1600 horse-power in Stirling water tube boilers, a duplex hoisting plant, capable of winding 6000 feet of 1⅜-inch steel rope, carrying 6-ton skips, at express speed, a triple expansion compressor plant capable of operating 65 power drills. Steel shaft and rock houses are also built here. Other shafts are being outfitted in the same magnificent way. Some miles from the mine is a steel stamp mill 132 x 214 feet, in which three heads are now installed with an initial capacity for 1500 tons of rock daily. There is a pumping capacity for 15,000,000 gallons per day, double the present needs, a great coal dock, with a railroad from mill to mine. All this is the work of one year, including a winter the most severe known in years, which came at the beginning of operations.

An edition of 1000 copies of this report has been printed and exhausted. Probably no additional edition will be issued.

D. E. W.

In his annual report, Brig.-Gen. A. D. Buffington, Chief of Ordnance of the Army, says that during the fiscal year ended June 30, 1899, $23,796,786 were expended in ordnance work. Eighty-eight 8-inch rifles, 110 10-inch rifles and 68 12-inch rifles were completed for the seacoast defenses. Twelve dynamite field guns of 2.5-inch caliber were sent to Manila. The test of one of the guns shows that it has a range of 1946 yards at an elevation of 30 degrees. The projectile contains 4.5 pounds bursting charge of explosive gelatine. The projectiles rarely failed to explode on striking land or water. A hole about 2 feet deep and 4 feet across is made by the explosion. A single horse can draw the gun, and the ammunition is carried on pack animals. When all the field artillery now being manufactured has been completed, the army will have 70 pieces each of 5-inch guns and 7-inch howitzers. There will be also five mortars of 7-inch caliber.

An unfounded report has obtained circulation in Western newspapers that the Union Pacific Railroad Company proposed to build a blast furnace at Cheyenne, Wyo. They may put in a small cupola for foundry use as an adjunct to their repair shops.

A Washington dispatch reports that the Board of Naval Construction have agreed upon a report recommending that the Navy Department award the contracts for constructing the six new protected cruisers authorized by Congress to the following concerns: Union Iron Works of San Francisco, Cal.; Lewis Nixon of the Crescent Shipbuilding Works of Elizabeth, N. J.; the Bath Iron Works of Bath, Me.; the Trigg Shipbuilding Company of Richmond, Va.; the Fore River Company of Massachusetts, and Neafie & Levy of Philadelphia. The contracts will not be awarded, however, until the Board's findings are approved by Secretary Long.

A statement was published in the issue of *The Iron Age* of November 9 that the Pencoyd Iron Works of the A. & P. Roberts Company have been purchased outright for cash by the promoters of the American Bridge Company. We are officially advised that this statement is incorrect, that no such transaction has taken place, and that no one has now an option on the plant or property of the Pencoyd Iron Works.

Central Metal & Supply Company, Baltimore, Md., who began business September 1 last, advise us that they are doing an encouraging amount of business and feel much gratified at the cordial reception tendered them by the trade. The company's business includes metals and plumbers', steam fitters' and canners' supplies. They occupy a commodious warehouse at 606 E. Lombard street. The company have been incorporated with the following officers: August Wehr, president; Dr. G. W. Lehmann, vice-president; William Schilpp, Jr., secretary-treasurer, and William L. Woutisseth, general manager. Two of the gentlemen interested in the company were formerly connected with Clendenin Bros. of Baltimore.

HARDWARE.

Condition of Trade.

BUSINESS is running along steadily in good volume, but the aggregate of transactions is not so large as a short time ago. This is owing not to any important change in the features of the situation, which continue very satisfactory, with an excellent tone, but is the natural result of the advance of the season, and the fact that the smaller trade have substantially in a general way covered their requirements for some time to come. Their stocks are in most cases larger than for several years, as the upward trend of the market has stimulated buying except on lines the high prices of which are interfering with their sale. The business between jobbers and manufacturers shows a perceptible diminution in volume except on season goods, such as Wire Cloth, Poultry Netting, Steel Goods, &c., in which large orders have been placed, or are now being negotiated. While in some lines the supply has been inadequate, and something of a shortage has been experienced, it remains true that, as a rule, stocks in jobbers' hands are ample and in some cases heavy, so that there is no present urgency about further purchases. There is also a disposition to be conservative on the part of the jobbers and to realize on goods in stock and under contract before placing further orders in anticipation of higher prices. It is the judgment of prudent merchants that this is the wiser policy at this time. Opinions differ widely as to the length of time present high values may be expected to hold, and the jobbing trade realize that if heavy stocks are carried when the reaction gives signs of occurring a serious break in prices may result in a scramble to unload. To guard themselves against a possibility of such a disturbance and the accompanying danger many of the wholesale houses are awaiting developments before making further extensive purchases, intending in the meantime to dispose of most of the goods on hand, which at current prices will yield a very handsome profit. There is no doubt that while the volume of business is large and the general condition satisfactory, high prices on certain lines are curtailing consumption in many directions, and retail merchants are accordingly becoming cautious about buying beyond their present needs. There is little complaint about collections, but the fact that many houses, both wholesale and retail, have, as a result of free purchases and the higher costs of goods, a larger amount of indebtedness than usual, is one of the considerations which justifies a conservative policy in realizing on present stocks before making further ventures that have in them an element of speculation. We devote in this issue much space to the report of the meeting of the National Hardware Association at Pittsburgh last week in view of the exceptionally interesting and important matters thus brought to the attention of the trade.

Chicago.

(By Telegraph.)

November promises to be one of the biggest months in the history of the local Shelf Hardware trade. Orders have come in very freely, both from salesmen and by mail. Considerable business is being done in orders now being placed for December and January delivery. Jobbers observe an improved demand for Tinware Covers and Trimmings. This indicates that the tinners are again making up stocks of Tinware for their own trade, the advanced price now prevailing on Tinware making such business rather profitable. A continued demand for Coke Plates is observed from the Furnace trade. The labor troubles in Chicago are shutting off considerable business in Galvanized Sheets and other requirements for the roofing and cornice trade, which should at this time be in much better demand. A fair movement is reported in Tin and Enameled Ware, but only in small quantities. The demand for Pocket Knives, Table Cutlery, Plated Ware, Skates and other articles of luxury and pleasure has increased considerably of late. A tendency is also seen to purchase better grades of such goods. This indicates that the prosperity of the country is having its effect on the people in general. From present indications it is asserted that Wire Cloth, and, therefore, Window Screens and Screen Doors, will be in short supply next year. Jobbers are advising their trade to place orders as early as possible for such goods if they wish to be properly supplied. An advance of 5 per cent. has been announced on Carriage Bolts, Machine Bolts and Lag Screws. Heavy Hardware jobbers are still enjoying a large business, which is running fully up to the volume of recent weeks. Their trade is only limited by difficulty in getting sufficiently rapid shipments from manufacturers.

St. Louis.

(By Telegraph.)

A report on Hardware trade conditions to-day must be similar to that of last week. There is no falling off reported, but, on the contrary, traveling salesmen are arranging routes to cover their territory earlier than usual for spring sales. Volume of sales is keeping up remarkably well and a particular feature of the business is the large number of orders for next year's spring goods. New stocks are being sold right along, and doubtless 1900 will see its full share of new ventures. In the manufacturing line locally a new concern is preparing to enter the field in making Galvanized Tubs, Pails and kindred goods, the higher price of necessary machinery proving no barrier to the enterprise. The mild weather has had its effect in checking somewhat the rush for shipments of winter goods—Shovels, Coal Hods, Stove Pipe and Stoves. Steel Range makers and Stove founders are, however, way behind their orders. Prices are keeping up well in all lines excepting Sheets. Galvanized Sheets are no stronger. Miscellaneous Hardware is moving freely and useful holiday articles are in particular demand. The sale of Cut Nails is said to be bigger than ever. Wire Nails are in good demand and Barb Wire is reported as in better action. Changes in price are few. Atkins' Saws have advanced 5 per cent. and Crowbars and Wedges ¼ cent per pound. Manufacturers of better grades of Refrigerators seem to have taken concerted action and made a practically uniform list of new prices bearing 20 to 25 per cent. advances. The apprehension

held by some careful salesmen that customers buying more heavily during this year would not be able to meet maturing obligations found no ground in fact. No stringency is reported and collections are good.

Notes on Prices.

Wire Nails.—Manufacturers are adhering closely to prices which have been in force for some time. Demand is moderate and usually for small lots. Quotations are as follows, f.o.b. Pittsburgh, terms 30 days net:

To jobbers in carload lots	$2 95
To " in less than carload lots	2.97½
To retailers in carload lots	3.10
To " in less than carload lots	3.20

Purchases are being made from second hands at figures below makers' quotations and jobbers are frequently shading above prices.

New York.—Diminishing stocks of lower priced Wire Nails in jobbers' hands have not had a stiffening effect upon the local market as anticipated. For quantities less than carloads the following quotations are shaded in some instances:

To retailers, carloads on dock	$3 25 to $3.28
To " less than carloads on dock	$3.30 to 3 41
Small lots from store	3.35 to 3.45

Chicago, by Telegraph.—Trade is in excellent shape. Manufacturers and jobbers report a very good demand. Prices are firmly maintained at $3.28, Chicago, for single carload orders and $3.38 for small lots from stock.

St. Louis, by Telegraph.—The good business shows no let up in this vicinity. Prices are unchanged at $3.33, base, St. Louis, for single carloads and $3.43 for small lots.

Pittsburgh.—The Wire Nail market continues extremely quiet, demand being light and buyers limiting their purchases to immediate requirements. It is the impression in some quarters that there will be no further advance in prices of Wire Nails. There continues to be considerable unevenness in prices among jobbers who bought Nails when prices were lower, and jobbers are also purchasing from each other. The tone of the market is strong and we quote, f.o.b. Pittsburgh, terms 30 days net:

To jobbers in carload lots	$2.95
To " in less than carload lots	2.97½
To retailers in carload lots	3.10
To " in less than carload lots	3.20

Cut Nails.—There is only a moderate demand for Cut Nails and the tone of the market is not so steady or strong as it has been. While the quotations determined on by the manufacturers in the Eastern territory are nominally in force they are departed from in many cases, as careful buyers are able to obtain lower figures. Thus, while to jobbers the price for carload lots should be regularly $2.60, base, freight to be added from Pittsburgh to point of destination, $2.40 or $2.45 is obtainable. Stocks purchased at lower prices are also causing some irregularity in the market and the offering of Western Nails in Eastern territory is referred to as interfering somewhat with the prices of the Eastern manufacturers.

New York.—The local demand is confined to small lots of Cut Nails. During the past few days the market has shown some weakness and prices are somewhat irregular, being based in a general way on $2.40 to $2.50, f.o.b. mill.

Chicago, by Telegraph.—The demand is running along on the same basis as before, with the jobbers quoting small lots from stock at $2.80.

St. Louis, by Telegraph.—Sales are reported as larger than ever, and whether due to difference in price compared with Wire Nails or returning popularity is not stated; $2.75 to $2.90, base, is still asked.

Pittsburgh.—Demand is light and the tone of the market is weaker than it has been for some time. We quote Cut Nails at $2.40 in carload lots and $2.50 in less than carloads, f.o.b. mill.

Barb Wire.—The demand for Barb Wire for domestic requirements is moderate. No change in prices has been made and quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash, 30 days:

To jobbers in carload lots, Painted	$3.40
" " Galvanized	3.55
" in less than carload lots, Painted	3.42½
" " " " " Galvanized	3.57½
To retailers in carload lots, Painted	3.55
" " Galvanized	3.70
" in less than carload lots, Painted	3.65
" " " " " Galvanized	3.80

Chicago, by Telegraph.—The strong demand continues for Plain Wire, but Barb Wire is not moving very freely, this being the dull season. A large spring trade, however, is confidently anticipated. Reports have been in circulation that a reduction was to be made on Galvanized Wire, but manufacturers state that no change of this kind is contemplated. Prices are as follows: Single carloads, Plain Annealed Wire, $3.13; Painted Barb Wire, $3.73; Galvanized Barb Wire, $3.88, with 10 cents advance by jobbers for small lots.

St. Louis, by Telegraph.—Better sales have been recorded this week at no revision in prices, which continue $3.78, St. Louis, for single cars of Painted and $3 88 for small lots, with 15 cents advance for Galvanized.

Pittsburgh.—Domestic demand is very dull, but there is a good deal being sold for export. We quote domestic Wire at $3.40 for Painted in carload lots to jobbers and $3.65 in less than carloads, with an advance of 15 cents for Galvanized, all f.o.b. Pittsburgh; terms, 30 days, net cash.

Smooth Wire.—Manufacturers of all kinds of Wire Goods continue to be heavy purchasers of Smooth Wire. The market continues firm at former quotations, as follows, f.o.b. Pittsburgh, terms, 30 days, net cash:

To jobbers in carload lots	$2 80
To " in less than carload lots	2 82½
To retailers in carload lots	2.95
To " in less than carload lots	3.05

Pittsburgh.—There is only a fair demand, but the market is strong. We quote: To jobbers in carload lots, $2.80; to jobbers in less than carload lots, $2.82½; to retailers in carload lots, $2.95; to retailers in less than carload lots, $3.05, all f.o.b. Pittsburgh; terms, net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14, inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, $1.10.

Screen Wire Cloth.—An active booking of orders in Screen Wire Cloth has been going on during the past few weeks and the manufacturers have now disposed of the greater part of next season's output. It is understood that prominent manufacturers of Wire will not sell new manufacturers in this line, and thus those who are in the field are practically secure in the matter of competition for some time.

Wedges.—An advance of ¼ cent per pound has been made in the price of Wedges on account of the condition of the market in the raw material.

Crowbars.—An advance has also been made in Crowbars, which are now quoted at about 4¼ cents, with concessions in large lots.

Carriage Bolts, Machine Bolts, &c.—At a meeting of the associated manufacturers of Carriage Bolts, Machine Bolts, &c., held on the 15th inst., a further advance was made in the price of the goods. The regular printed discounts are now as follows, with an additional 10 per cent. discount to the large trade:

	Discount. Per cent.
Common Carriage Bolts	45 and 5
Machine Bolts, H. P. Nuts	50 and 5
" " C. & T. Nuts	45 and 5
Plow "	50 and 5

Coach and Lag Screws.—An advance similar to that made in Carriage Bolts, &c., noted above was made last week on Lag and Coach Screws, which are now quoted as follows, with an additional 10 per cent. to the large trade:

	Discount. Per cent.
Common Point	65 and 5
Gimlet "	65

Nuts.—An advance of 1-10 cent per pound was made on the 16th inst. on Cold Punched Nuts and 2-10 cent per pound on Hot Pressed Nuts.

Poultry Netting.—A moderate advance has been made in the price of Poultry Netting by the concerted action of the manufacturers. Small lots are now quoted at discount 75 and 10 and 5 per cent., with special quantity prices for 250 and 1000 roll lots. Orders are now being booked for delivery up to July 1. A change has been made in terms, which is of a good deal of interest to the trade, especially in view of the discussion which has been going on in regard to the cash discount. Instead of having the terms 30 days net as heretofore they are now 60 days, with 2 per cent. discount for cash in ten days. Freight is allowed on carload shipments to all points east of the Mississippi River, and on all shipments west of that river freight is allowed to Mississippi River crossing point nearest destination. March 1 dating is given on invoices covering shipments made prior to March 1. American Steel & Wire Company have changed the name of their Poultry Netting to American instead of McMullen.

Leather Belting.—The following is a revised price list of Oak Tanned Leather Belting adopted by the manufacturers November 15, 1899, to go into effect on November 20:

Width. Inches.	Price per foot.	Width. Inches.	Price per foot.	Width. Inches.	Price per foot.
⅛	$0.08	5½	$1.01	23	$4.26
¼	.10	6	1.11	24	4 44
⅜	.12	6½	1.20	25	4.63
½	.13	7	1.30	26	4.81
1	.14	8	1.48	27	5.00
1¼	.19	9	1.67	28	5.18
1½	.24	10	1.85	30	5.55
1¾	.29	11	2.04	32	5.92
2	.34	12	2.22	34	6 29
2¼	.39	13	2.41	36	6.66
2½	.43	14	2.59	40	7.40
2¾	.48	15	2.78	44	8.14
3	.53	16	2 96	48	8.88
3¼	.58	17	3.15	52	9.62
3½	.63	18	3.33	56	10.36
3¾	.67	19	3.52	60	11.10
4	.72	20	3.70	64	11.84
4½	.82	21	3.89	68	12.58
5	.91	22	4.07	72	13 32

Double Belts are twice the price of Single and intermediate widths are sold at proportionate prices.

The list is subject to the following trade discounts:

	Discount. Per cent.
Extra Heavy Short Lap	50 and 10
Regular Short Lap	60 t 60 and 5
Standard	60 and 10 to 60 and 10 and 5
Light Standard	70

The advance in the list is the result of higher prices of Leather. Manufacturers report themselves as exceedingly busy. No united action has been taken by manufacturers regarding an advance in the price of Round Leather Belting. Some manufacturers, however, have advanced the list price on Solid and Round Belting and Raw Hide Rope.

Chicago Spring Butt Company.—An advance in the prices of the Chicago Spring Butts has been made by the Chicago Spring Butt Company, by which the discount is made 25 per cent. instead of 30 per cent. as heretofore.

Stove Boards.—Ornamental Stamping Works, Grand Rapids, Mich., quote discount 40 per cent. on gross lots of their Stove Boards and 33⅓ per cent. on less than gross lots. This line of goods consists of oak and rosewood finished Stove Boards, which are described as made of one piece of steel, with edges and corners turned smoothly around double clinched wood linings, the plates being japanned on both sides to prevent rust. Their line also includes Blue Enameled Stove Boards with gold decorations and Crystallized Tin Stove Boards.

Glass.—A meeting of Window Glass jobbers is being held in this city, with the object in view of forming a national Glass jobbers' association. This is being done in harmony with the views of the American Window Glass Company. The object of such an association would primarily be to prevent an open market and ruinous competition. It is possible as a result of such an association that a friendly agreement between the American and independent companies may be reached, and perhaps a consolidation in some form of the interests of the two. This would contemplate uniform prices and a restricted output of Glass. A committee of representative jobbers now have the arrangement of details incident to the formation of the jobbers' association under consideration.

Under date of November 10 the American Window Glass Company stated that in response to a request of Window Glass jobbers they withdrew their offer of October 19 regarding the 5 per cent. rebate to qualified buyers, and that after November 18 their prices, terms and conditions would be in accordance with a circular of the American Glass Company of July 27, 1899. Present prices are guaranteed by the company until January 1, 1900.

Jobbers at some Western points are making quotations of 80 and 20 per cent. discount on less than carloads of Glass. Prices in this market range from 80 and 10 to 80 and 20 per cent. discount for Glass from store, according to circumstances. Assortments are broken and demand is light at this point.

Paints and Colors.—*Leads.*—The gradual falling off of business in White Lead in Oil usual at this period of the year is noticeable. Among the trade it is anticipated that higher prices will be made for 1900, but as yet no announcement in this direction has been made. The market is firm at former quotations, as follows: In lots of less than 500 pounds, 6½ cents; in lots of 500 pounds and over, 6 cents.

Oils.—*Linseed Oil.*—The Linseed Oil market is firm at former quotations of 44 to 45 cents per gallon for City Raw, according to quantity. Out of town brands are held at about the same figures. New business for this season is naturally moderate.

Spirits Turpentine.—More liberal receipts of Turpentine at Savannah have caused an easier market and a falling off in price. Lower quotations at this point resulted, with purchases restricted to jobbing lots. Present prices are as follows: Southerns, 51 cents per gallon; machine made barrels, 51½ cents per gallon.

Daniel Agnew Moore.

DANIEL AGNEW MOORE, president of the Pittsburgh Screw & Bolt Company of Pittsburgh, died at his residence in the East End, in that city, on Tuesday evening, November 14. Mr. Moore had been ill for about three weeks with a complication of diseases. He was born in St. Louis, Mo., in 1864 and graduated with honor at the Yale University in 1886, and then took a special course at the Columbia School of Mines and studied one year at the Massachusetts Institute of Technology. He went to Pittsburgh in July, 1888, entering the employ of the Oliver Iron & Steel Company, then known as Oliver Brothers & Phillips. He was elected general manager of this company in September, 1894, and remained with the Oliver Iron & Steel Company until March, 1897, withdrawing from that concern to organize the Pittsburgh Screw & Bolt Company in connection with Thomas W. Smith, also for many years with the Oliver Iron & Steel Company. Mr. Moore was made president of the Pittsburgh Screw & Bolt Company from their inception and retained that position until his death. He had many warm personal friends in business and social circles in Pittsburgh and elsewhere and his death is much regretted. Mr. Moore married in 1889 Miss Millie Card of Pittsburgh, and is survived by his widow and a son and daughter.

Trade Items.

T. G. WILLIAMS, formerly with the United States Iron & Tin Plate Company and latterly with McClure & Co., Pittsburgh, is now taking tin plate orders for delivery in the first quarter of next year by the new Tyler Charcoal Iron Tin Plate Mills, Washington, Pa.

C. B. BARKER & Co., 70 74 West Houston street, New York, will on or about January 1 next occupy the building at 93 Reade street. They will carry a complete stock of Bicycle Sundries and Fittings, Manufacturers' and Sewing Machine Supplies, Needles, Belting and Oils.

THE employees of Joseph Breck & Sons, Boston, Mass., recently had their fifth annual reunion at Berkeley Hall, in that city, about 250 persons being present. The room was tastefully decorated with Breck's products, and the company were entertained by the rendering of an interesting musical programme, dancing following the concert.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

ADVERTISING FOR PROFIT.—No. 10.

BY H. C. W.

BEYOND ANY QUESTION the man unfitted for the work either assumes it or is given as his portion—much more often than is realized—that for which he has neither tact nor talent, in the preparation of advertising matter for the firm. The same man may readily recognize lack of value in another's work and yet be totally unable to add to it, correct, or point out the weak places. Again, the secret of much poor work put out and called advertising lies in the lack of respect for its importance, and in the fact that it is thrown onto any pair of shoulders that will assume it.

Its Preparation

SHOULD BE MOST CAREFUL, insomuch that there should be a specified time for it, not to be interfered with, and not occupied by any other matter of importance. Then, too, for the best results there should be, as nearly as possible, absolute privacy. No one—I care not how clever he may be—can write a paying ad. while a solicitor waits for copy. Yet hundreds are furnished just in this way, and the job is called done. How many of us recall the proprietor standing at his desk, jabbing his memory, and with anxious gaze going over his stock for seasonable goods—jotting down this and that article. Finally with the terms "Lowest prices in the city," "Headquarters," "Just arrived," &c., repeated several times, the solicitor is dismissed, and for that time the value of your space bought is lost, promising yourself each time that the next ad. shall have more consideration. This is not preparation, and does not bring results.

True Preparation

BECOMES A SERIOUS MATTER to the man who understands and believes in advertising as a power for selling goods. In giving it the time set aside for it, it is well to first make memoranda of all goods to be pushed. Then bracket each line of goods with your comments on same, as to any special merit, amount of stock, length of sale, &c., followed with prices for the lines. This should be pursued week after week, or as often as changes are made. It is well to carry through all your work an individual line of type. It will come to be recognized as yours, and that and your space will readily identify you in all news paper work. If it be one line of goods you are working on, go into every necessary detail. The one line is better than many, and as a rule results are greater where changes are frequently made. A good rule is to

Write As You Talk,

AVOIDING ELABORATE LANGUAGE. On the contrary, the simplest, strongest arguments used over the counter are just those which hold the attention of the reader when confronted with the daily or weekly journal. The great American public has become more than a reader, a student of good work in advertising, as evidenced by the thousands who turn first to the ads. and last to reading matter. It is because advertisers the world over have learned how to judge of human nature—how to appeal to it; because of the truth and simplicity that begets confidence in the reading; because of the fact that the writer has learned to keep in mind the fact that a customer is a customer wherever you find him, and is looking in the newspaper for the arguments offered over the counter. Advertisements have come to be items of news, and it is news the people are on the lookout for.

Who Should Do the Work.

WHO IS BEST FITTED FOR IT? As stated at the beginning of this article, it is very often the wrong man, and yet there is no occasion for the fact. The writer remembers a merchant stating to him: "I haven't a man in my house who can write a decent advertisement." This could not have been true. The man did a large business, sold thousands of dollars' worth of goods, and in all that business I venture there was more than one man capable of writing good ads, for the reason that if they would write as they talked—and they talked well—the work would tell as well one place as another. Many merchants fear to give the work of writing ads. to an employee; yet often they are themselves so busy as to neglect it or give it up altogether. It is also frequently the case that the proprietor himself is utterly without tact or talent enough to do the work and neglects it entirely.

Select an Employee,

TWO OR THREE OF THEM, and let them make a trial of ad. writing at their leisure. It will surprise you to see what you have developed. You never will know or have their help if you do not try them Catch one of them unawares while selling a Wringer, a Washing Machine or a Freezer. Listen to his arguments; then if you want a clever ad. have him write it out in exactly the same language. There are hundreds of employees glad to take up just such work if offered the chance, and frequently their work will be better than your own, if only from the pride they will take in it and the time they will give to preparation, knowing it must come under your eye before publi cation.

A Merchant Without Time,

OR LACKING QUALIFICATION for this class of work should never attempt it. He will be largely a failure, become discouraged, lose what he invests in advertising contracts, pronounce the whole system without merit, and be content to go along in the old rut—if the rut holds out.

And yet he need not give up. The country is full of men who make advertising a specialty—some with merit to back them, others with not so much. The day of inexpensive, clever cuts is at hand. The average clerk is reaching out to some day be a proprietor and with the help at hand and those offered there is certainly no excuse to offer for any result but that of advertising for profit.

NEWSPAPER ADVERTISING.

BY WESTERN.

About the first thing to be thought of when arranging an advertising campaign is the amount to be expended. A good general rule is to lay aside 2 per cent. of the gross receipts for this purpose.

AMOUNT EXPENDED.—Of course the amount that one can afford to spend in this way will vary according to the average per cent. of profit he can realize from his sales If he handles goods on which the margin of profit is large he can afford to invest a larger percentage in advertising them.

BUYING SPACE —As much judgment and care should be exercised in the advertising investment as in any other investment that the merchant makes. He should buy just that which he can use profitably and no more.

WHAT PAPERS.—The choice of media is a knotty prob-

lem that confronts every advertiser. There are only a few general rules which will apply to this phase of advertising. Aside from these the matter must be carefully studied out for each individual case.

NEWSPAPERS.—In the front rank of advertising media stands the newspaper, and for the retailer nothing can equal it as a medium. It is generally conceded that the daily holds first place among newspapers, but in the smaller towns and villages the weekly often brings the best returns. One should select for his use the best paper in his locality. That is, the paper that reaches the greatest number of people of the class that he wishes to reach. The best paper for an advertiser is usually the one with the largest *bona fide* circulation, but this rule does not always hold true. The paper with the largest circulation often goes to a class that the merchant does not wish to reach.

PROPORTIONATE COST.—The paper with the largest circulation, however, usually does not charge as much for space, in proportion to the number of copies circulated, as the paper with a smaller output.

THE POPULAR PAPER.—It's a good plan to question people from the various localities that it is desirable to reach and thus ascertain which paper is the most popular in each neighborhood. The newsboys also can nearly always tell in which particular field each of the various papers is strongest.

ELASTIC CIRCULATION.—The statements of advertising solicitors should be carefully analyzed and compared with reports received from various other sources. It is surprising how many papers have an elastic circulation statement.

CONTRACTING FOR SPACE.—When the relative value of the papers has been decided and the best one chosen a certain number of lines or inches of space should be contracted for to be used within a given space of time. Just enough space should be used in each issue to express one's self clearly and obtain good display.

ACCORDING TO NEEDS.—The mistake is often made of contracting for a certain amount of space to be used in every issue for a given period of time. When it is possible to draw up a contract after the former method it is much better to do so. A merchant will have much to say at one time and little at another. In this way, if he is bound to use a given amount of space in each issue, he is apt to waste space at one time while he has a crowded advertisement at another.

SECOND RATE PAPERS.—After arrangements have been completed with the best paper it is sometimes advisable to use some space in the inferior papers. An error to be avoided is the spreading of the appropriation too thinly among a great number of media. It is better to use more space in the better papers until the business warrants a greater outlay.

CHANGE IN EVERY ISSUE.—After the advertising space has been obtained it should not be neglected. The announcements should be changed often. It is best to change copy with every issue. There are occasions—but they are few—when it pays to let an ad. stand for more than one issue.

NEWSY ADVERTISEMENTS. — Advertising is business news, and unless it is kept newsy the public will soon cease to read it. There are thousands of different articles of merchandise in the average retail Hardware store and it should not be difficult to find good subject matter for frequent change in advertisements.

THOROUGH PREPARATION.—Every merchant should set aside a certain amount of time every day for his advertising work. If he cannot find time to give this branch of his business the attention it requires he should make it the duty of one of his assistants.

PROCRASTINATION. — Advertising is too often the last thing thought of in the daily routine of business, whereas, next to the buying, it is the most important branch of work.

BUSINESS TALK.—Nearly all hardware merchants find it difficult to write advertisements. If each merchant would remember how he talks to the patron in his store and talk to the public in his advertisements in the same honest, simple, plain English way there would be much more good Hardware advertising.

HUMOR.—Very few men can write a good humorous advertisement. Therefore the temptation to be funny or cute should be avoided. The aim should always be to bring out the good points of the goods advertised, but not to exaggerate them.

A HAPPY MEDIUM.—The advertisement that strikes the happy medium between inadequacy and exaggeration will be very nearly perfect. Sentences should be short, and the whole advertisement should be as short as it possibly can be without losing any of its force. Above all things, an advertisement should tell the truth.

VARIETY OF HEADINGS.—When one has finished an advertisement for one article and finds it desirable to use more space he should write the advertisement for it just as he has the first one and then place it under another heading.

TYPOGRAPHICAL.—The setting of an advertisement has much to do with its effectiveness. Good display can be obtained with two or three styles of type. More than this number of faces should seldom be used. Good strong headlines with perfectly plain body matter makes good display.

WHITE SPACE sets off an advertisement much better when it is all in one or two places than it does when scattered helter skelter among a number of lines of different sized type. Headlines which are set with capitals and small letters are usually more attractive and easier to read than those set entirely with capitals.

STYLE OF TYPE.—If the writer of an advertisement is not familiar with the different sizes and faces of type he had better not designate the style to be used. He had better tell his printer how he desires the advertisement to appear and then trust to the printer to set it up correctly.

A SAMPLE ADVERTISEMENT.—The specimen advertisement below illustrates the principles referred to: Limited styles of type, considerable white space, prominent head lines set with capitals and small letters, name of advertiser plain but not obtrusive, every day language, brevity of sentences and of matter.

A
Leaky
Roof

IS AN EXPENSIVE ROOF this rainy weather. A small leak will cause great damage. Have your roof attended to. It will not cost nearly so much to repair the hole as it will to repair the damage caused by it. Our tinners can do the work in good shape.

—Then use some of our paints to keep it "fixed."

J. B. Stanbrough,
180 Front Street.

Space Valuable.

It's much more important to make plain the goods advertised than to bring out the firm name. If people are interested in the goods they'll see the firm name; they'll make it a point to see it. Space is too valuable to be used up by printing firm names with the biggest type in the office.

ILLUSTRATIONS.—Illustrations are a great help toward effective advertising—that is, the right kind of illustrations. They attract attention to the subject matter.

Neat outline cuts which accurately illustrate the goods advertised can be profitably used.

PROFITABLE ADVERTISING. — The advertising of the retail Hardware store will prove remunerative just so long as it is properly conducted.

Expert Criticism of Hardware Advertisements.

WE herewith reproduce in reduced form some carefully prepared advertisements of prominent Hardware merchants, with criticisms from several gentlemen who have given special attention to the matter of advertising, some of whom are professional writers of advertisements, and others successful and intelligent Hardware advertisers. The writers, whose names are withheld, are designated by the initials A. B., E. F., G. H., I. J. and K. L., which are given in connection with their comments.

They Are Savers.

The apple parers we have for sale are first class goods, being made from the best steel and put together in a way to secure the best results. An apple parer is a time saver and an apple saver. Ours can be operated by a small child, thus saving the busy housewife's time to do something else. The machine is constructed so scientifically that the paring is removed very thin, thus wasting none of the fruit and insuring more of a net product than by the use of any other kind. Put the little girl to work and let her help, the apple parer being so simple that she can operate it as well as a grown person. Make money by buying a parer at **49c**

HARRY U. TIBBENS,
Connellsville, Pa.

A. B. SAYS: Too much of detail and repetition that do not attract or interest a buyer. Neither is an Apple Parer a Lathe made piece of gear cut machinery, as indicated. Twenty words with the name of the article in large letters and the price (its redeeming feature) would make a much stronger ad.

K. L. SAYS: This is good. It tells how the Parer is a material saver. It tells how easily it can be operated. It tells how quickly the work can be done—much more quickly than by hand—and it tells the price. The display is excellent.

G. H. SAYS: the text of this advertisement is too long, the caption is poor, and valuable space is wasted by repetition. It would be much better to mention the advantages of this particular Parer in fewer sentences and larger type. These two sentences: "Ours can be operated by a small child, thus saving the busy housewife's time to do something else," and "Put the little girl to work and let her help, the Apple Parer being so simple that she can operate it as well as a grown person," are identical in effect. A statement well presented does not need to be repeated. Write advertisement so that it may be easily and quickly read, so that the merits and price of the article mentioned may, if possible, be noted at a glance. Such an advertisement has many advantages over a long, wordy article, arranged in small type.

E. F. SAYS: Too much space used to advertise a 49-cent article. It is a good heading.

I. J. SAYS: A good ad. well set. Too many words, the same statements could be made in a much shorter, clearer way. The shorter a statement in an ad. the better providing you cover the ground, as more people will read the shorter one.

E. F. SAYS: Here again the compositor has visited about every case in the office in setting up the ad. To be productive an ad. must be specific in its statements. No doubt Jones is perfectly satisfied that his place is the best, and that his Farmers' Tools are the best in Springville, but I doubt if anybody can find anything in this ad. to indorse that statement.

A. B. SAYS: Allow me to suggest too much of the lecture and not enough of the advertisement. No goods are mentioned—no prices quoted—therefore no means of knowing its effect. The statements made are no doubt true ones.

G. H. SAYS: An excellent advertisement, well written, well illustrated and generally convincing in tone. For an advertisement that does not particularize nor mention prices, it is unusually strong.

A GENTLEMAN who is familiar with advertising writes: Lacks point and assumes too great an interest in his motto, which is too commonplace and lengthy for effective advertising purposes. The mention of some particular goods, with prices, would be more effective.

FARM BURDENS ARE DECREASED AND PLEASURE OF THE FARM INCREASED BY THE USE OF

Bought at

A. D. JONES'
Hardware Emporium.

JONES' MOTTO:
"Buy the Best Goods Made at the lowest possible price and sell them at a moderate profit, to all alike,"
WHICH SIGNIFIES UNLIMITED CAUTION SELECTING HARDWARE,
ENTICES ALL
CAREFUL BUYERS

AS A MAGNET ENTICES STEEL,

TO
JONES'
SIGN OF THE HAND,
No. 57
MAIN ST.,
Springville, N. Y.

THIS IS
Ice Cream Weather
Buy a No Name Freezer and enjoy life these hot days. . .
1 Qt., $1.15, 3 Qt. $2.25,
2 Qt., $1.85, 4 Qt. $3.00.
PERSONNE & NIHIL,
624 Main Street, - - - BOSTON, MASS.

A. B. SAYS: The arrangement could be better, but the ad. should sell goods. A cut of the Freezer would be more effective.

G. H. SAYS: Short and to the point, and the old gentleman in the illustration really looks as if he had encountered ice cream weather.

C. D. SAYS: In this specimen the illustration acts as an incentive in the mind of the reader to buy, because it im-

presses him with the fact that it is hot weather and that the remedy is "ice cream," and starts in his mind a desire for same. It takes only a little thing sometimes to make a purchaser, and desire and price are large factors in the game with the man who spends the money.

E. F. SAYS: The general appearance of this ad. is good. Any person looking over a paper on a warm day would be quickly attracted to this ad. by the illustration. The quoting of prices is an excellent rule—the two lines, "Buy a No Name Freezer and enjoy life these hot days," could be improved with a statement of the length of time it takes to make a Freezer of cream. The proper motto to keep before one in writing an ad. is, Don't get away from the subject; keep your gun pointed at the article you are advertising. Make the subject an interesting one.

Odd, Isn't it?

That people will persist in paring apples by hand.

The New Way

is chuck full of merit. Our new parer, the Turntable, is the outcome of long experience. It performs its work in the most rapid and economical manner. The machine is warranted to you. Don't experiment with other parers. If you haven't bought, do so at once, and buy the Turntable.

W. R. TILTON.

A. B. SAYS: Cut of an Apple Parer would be much more to the point. No connection is shown directly or indirectly as between the cut used and the subject at hand.

G. H. SAYS: The use of an illustration that has no bearing whatever on the subject of an advertisement may in many cases be advantageous, but we are of the opinion that in advertising such goods as Hardware the space may be better occupied with an appropriate cut. For instance, a good reproduction of the "Turntable," itself, would be much more acceptable for the advertisement than the drawing used. The text is poorly written, too, and might better describe the "Turntable" and the way to use it. The word "chuck" is misused; it should be "chock," and it would be a good idea to mention the price.

E. F. SAYS: I like the style of type in this ad., and the heading is good, but there is nothing in the body that would arouse a woman's desire to possess a turntable Parer. A cut of the new Parer would have been preferable to the illustration.

I. J. SAYS: Should quote prices. Well set and attractive, but do not think an ad. of this kind will sell as many Apple Parers as an ad. that shows on its face what it is advertising. Because this ad. is attractive many people will read it who will never need an Apple Parer; but, then, there are many other people who need Parers that will not read the ad., for the advertising is the last thing in the daily paper that the ordinary man reads.

If you are using many apples or are thinking of doing them up the word "apple" will interest you quicker than any other advertising the same thing. If you do not use apples, who cares whether you read the ad. or not?

C. D. SAYS: This sample, as an advertisement, meets with our approval for several reasons: 1, Because prices talk—there is no doubt about this. We have tried the experiment both in our "ads." and in our show windows and cases. Our competitors may get some advantage from our show of same, but in the meantime the display of tempting prices is selling goods for us. 2, This advertisement confines itself to the things that farmers always want; is specific in its statement, and illustrates the fact that cash is a great factor in the buying of his outfit.

On a Cash Basis

At CATLIN'S "On the Hill."

SCYTHE STONES,	each.	5c.
HAY RAKES,	"	10c.
SHOVEL HANDLES,	"	15c.
GRASS HOOKS,	"	20c
SOCKET HOES.	"	30c.
HAY FORKS, 3 Tined,	"	35c.
SHOVELS, Solid Steel,	"	65c.

all GOODS CHEAP, No CHEAP GOODS.

CASH only BUYS but buys MORE.

A. B. SAYS: A good, sound, sensible advertisement that will bring buyers every time.

E. F. SAYS: This ad. is a very good one, and ought to bring results. The cut at the top calls attention to Farmers' Tools. The word "sold" should have been put above the words "On a Cash Basis" to make it read easily. The prices quoted are low enough to be entertaining. If I were Catlin I should adopt the two lines at the bottom of this ad. for the "motto" of the store. My name would never appear in print without the motto. It's thoroughly good.

K. L. SAYS: A border would have strengthened this effort; however, the idea is a good one and the advertisement probably brought good returns. It often pays to make such advertised prices especially low for a day or a week, stating plainly that they are special prices. The plan usually will pay for itself in profits upon other goods sold, and often will win new trade.

G. H. SAYS: This is a price-list, rather than an advertisement. As to illustration and typographical arrangement, it is very good, and if the prices are reasonable it will appeal to the farmer who is looking for the articles advertised.

Price-Lists, Circulars, &c.

IMPERIAL CUTLERY WORKS, Newark, N. J.: Illustrated and revised catalogue of Table Cutlery, Butchers', Kitchen, Tobacco, Bread and Putty Knives in a varied assortment of styles and sizes.

THE HAYDENVILLE COMPANY, Haydenville, Mass., and New York: Special Supplementary catalogue of Plumbing and Steam and Brass and Iron Goods.

NATIONAL HARDWARE ASSOCIATION.

FIFTH ANNUAL CONVENTION.

THE fifth annual convention of the National Hardware Association was held in Pittsburgh on Wednesday, Thursday and Friday of last week. The attendance both of members and of manufacturers and their representatives was the largest in the history of the association, and the convention the most interesting and successful. Nearly 500 persons took some part in the proceedings of the convention, and more than 400 enjoyed the banquet on Friday evening.

THE OPENING SESSION.

H. H. Bishop, president of the association, called the convention to order at 10.30 Wednesday morning. Led by Hobart B. Weed of Buffalo and John W. Hubbard of Pittsburgh those present joined in singing the national anthem, "My Country, 'Tis of Thee." To assist the secretary in his arduous duties J. H. Van Newkirk of New York City was elected general secretary, and R. M. Repp of Pittsburgh, railroad secretary.

The roll call followed and showed a very large attendance, nearly 200 delegates responding. A full list of the delegates, with the names of manufacturers and other persons connected with the trade, is presented elsewhere.

After a motion to dispense with the reading of the minutes of the 1898 meeting had been carried, Mr. Bishop, after requesting Second Vice-President Brace Hayden to take the chair, made the annual presidential address, as follows:

President Bishop's Address.

In greeting you on this, the occasion of our fifth annual convention, the circumstances are such that I am naturally led to take a retrospective view.

We are assembled in the city of Pittsburgh, the acknowledged center of the Iron and Steel industry, an industry which lies at the root of our own business, and in whose prosperity or adversity we must participate. It is the city also in which we held our first annual convention. We are in the same hall, have the same general surroundings as then; are welcomed with even greater hospitality, and must feel that we are among friends. They welcomed us then as an infant organization, an association with good objects in view, worthy of encouragement, but with ultimate success in doubt. Those were days of trouble and adversity, and perhaps the same doubts found a place in our own minds, although mingled with hope and resolve. Four years have elapsed, and with each succeeding one has come greater strength, greater usefulness, greater accomplishment.

A SERIOUS ASSEMBLAGE.

We assemble to-day with larger membership, larger attendance, more enthusiastic interest than ever before. In years past, many of you have attended these meetings only after persistent urging. To-day you are here because you want to be, because you realize that benefits can and will be derived, and because you know that your convention is not merely a social gathering, of which pleasure is the main feature, but a serious assemblage of serious men for the consideration of serious problems.

I congratulate you upon the substantial progress evidenced by these facts. It is indicative of growth, of strength of purpose, and is encouraging for the work that lies before us, and to which your attention will be called through other channels than this address.

THE CHANGE IN BUSINESS CONDITIONS.

At the time of our convention held in Milwaukee, a year ago, few, if any of us, anticipated the wonderful change that has come over business conditions during the present year. These changes are of such a character that we must stop and carefully consider their import, and especially what their effect is to be upon our own business affairs. All will concede that the large increase in values, which has been a strong characteristic of the past year, has had a favorable effect, especially so with those who have availed themselves of the opportunities for profit thus afforded. But the question must have occurred to all of us whether these conditions are to be of long or short duration. An interchange of views upon this important subject is certainly a judicious expenditure of your time on this occasion, and has been provided for in the programme of proceedings. It is to be hoped that the subject may receive full attention and discussion from all standpoints, and that the conclusion reached may be so based upon logic and reason that the final opinion of the association may take a place in trade annals as authoritative for the whole body of merchants in our particular branch.

CONSOLIDATIONS.

The year 1899 marks the commencement of an epoch in the history of the manufacturing industry of our country. It has witnessed the consolidation of large interests under one management to an extraordinary degree, and when this has not been deemed practical the co-operation and united action of those who were formerly competitors, but by the co-operation have become friends. All such organizations are defined in the public press and in ordinary conversation as "trusts." Politicians seek to make their existence and control a polical issue upon which we are to take sides, either for or against. To my mind the problem is less one of politics than of business economy. It is the business world that will either foster or destroy the movement. This subject is therefore an important one for us to debate. It is well for us to consider the causes that have brought these organizations into existence, whether their existence is a blessing or a curse, whether they will be so conducted as to produce beneficent results to themselves, to their customers and to the public at large.

POWER OF THE ASSOCIATION.

From experience gained during the past year in negotiations with organizations of this character, I can assure you that the views and wishes of this association are, and will be, respected and valued. The importance of your co-operation and assistance is not underrated, and you can, if you will, be a factor in making them an instrument of good for all concerned, or in arresting a tendency toward evil.

I would that it were within my power to make each one of you feel the enthusiasm that I do myself, as to the power of our organization for good, not only for our own members but for our friends, the manufacturers, and our still dearer friends, our customers. We can with proper organization exert a strong influence toward carrying trade into its proper channels, from which during the years past it has been frequently diverted. We can convince the manufacturer that his province is manufacturing, that ours is distributing, and that the retailer's is in supplying the consumer. That each has his rights. We can formulate a code of ethics for trade customs that will be accepted as authority and will be the unwritten law to govern not only this generation but those which are to follow us. We can, by fostering confidence and good will among ourselves, render our business life peaceful where it has been warlike.

YIELDING TO THE MAJORITY.

To achieve this we must act as one man, must have but one opinion, and that must be the opinion of the majority. Each one must feel a willingness to yield some pet theory that is not approved by the majority, and to act on the lines that may be deemed best for all. You must have a mouthpiece through whom these views and

opinions are to be presented and contended for, and he must not be embarrassed by contrary views expressed in private conversation. More detailed views upon this subject will undoubtedly be conveyed to you in the report of the Executive Committee.

REPUTATION OF THE ASSOCIATION.

As indicative of the fact that our reputation as an association is not confined to this country, it is only necessary to call your attention to the enthusiastic reception tendered our ex-president, W. W. Supplee, by the National Association of Great Britain, on the occasion of a visit to that country during the past year. While we all recognize that the personality of the man would of necessity command respect, we cannot be blind to the fact that the ovation accorded him was largely due to his official connection with this organization. It is to be hoped that he may be prevailed upon to give us, in the course of our session, some account of his experiences, which will without doubt be alike pleasant and profitable to us.

DEATHS DURING THE YEAR

While we are assembled here in greater numbers than ever before, and our ranks so far as firms or corporations remain unbroken, we must pause a moment to extend sympathy and condolence to those who have met with losses by death in their own companies. The roll for 1899 is a longer one than ever before:

B. H. Babcock, Babcock Hardware Company, Binghamton, N. Y.

R. Francis Richards, Richards & Co., Boston, Mass.

Geo. Tritch, Geo. Tritch Hardware Company, Denver, Col.

Wm. Honeyman, Honeyman, De Hart & Co., Portland, Ore.

Jas. D. Maharg, J. M. Vance & Co., Philadelphia, Pa.

Mr. Babcock will be remembered by those who attended our last convention, and who had the privilege of meeting him. Quiet and unassuming, he was respected for his worth by his associates and all who knew him.

Mr. Richards of Boston was the head of an old and respected firm. He was in the prime of life and had much to live for. His competitors in his own city can bear testimony to his character and to the grievous loss that they have sustained.

Geo. Tritch was one who has long been known in the trade. A strong character and unique. In the early days of his life in Denver, it is related that in buying he never made an effort to purchase at extreme market prices, but indeed frequently paid higher rates. His reason as given to an inquisitive friend was that it was to his advantage to pay high prices, for he always added 100 per cent. in selling anyhow. Mr. Tritch is also well known for his prognostications in regard to high and low values, in which he had the utmost faith. He passed to a well earned rest, and his name will continue to exert an influence for many years.

Mr. Honeyman of Portland has never been present with us. His firm stands among the best on the Pacific Coast, and we can do no less than extend our sympathies to his partners, who have been with us in the past.

Jas. D. Maharg of Philadelphia, connected with the firm of J. M. Vance & Co., was an example of the type of merchants produced by the City of Brotherly Love. Respected by his colleagues and all of his friends, he has passed to the beyond, where trouble ceases.

While we have met with the losses, it is after all only what we must expect and be prepared for in the course of nature. Others must be found to take up the work they have performed, and to do it as well as or better than their predecessors.

REPORTS OF WORK.

Reports of the work accomplished during the year will be presented to you by the secretary-treasurer and the various committees. Recommendations as to policies for the year to come will emanate from the Executive Committee, and I bespeak for all these documents the most careful consideration.

SECURING REASONABLE PROFITS.

It has been my privilege and pleasure to address you by circular letter a number of times during the past year, principally upon the subject of concerted effort toward taking advantage of the market conditions to secure yourselves a reasonable profit, and urging upon you the maintenance of prices that may have been established by organized bodies of manufacturers. The kindly expressions of approval of these letters from many members have been exceedingly gratifying to me, and from reports heard from many sections I am satisfied that they have not been entirely without result. Testimony is very general to the effect that the market has been followed more closely than in similar periods when the same conditions prevailed, and if this testimony is true it must be conceded that the existence of our organization has been a prominent factor in accomplishing this result. We should not be satisfied with what has been done in this respect. If there are sections where confidence and good will are yet but little developed, let us hope that the experience of those in more favored sections may serve as encouragement to make further efforts. I believe that an interchange of views upon this subject would prove very interesting and advantageous to all.

ENLISTING THE SUPPORT OF TRAVELERS.

With the approval of the Executive Committee, I issued on September 21 a letter to the traveling salesmen of all Hardware houses in our association, asking for an essay on the subject, "The Difficulties of Selling Hardware with Profit and Some Practical Remedies." These circular letters were sent to the houses for distribution, and we have no means of knowing just how many actually reached the salesmen. The time for receiving contributions expired by limitation November 1. Up to that date 78 essays had been received. According to the terms of the offer, judgment was to be passed upon their merits by a committee of three, who at the time of writing this address are performing the work assigned them. It is to be hoped that they may be able to reach a conclusion in time to present to this convention.

This is the first move that has been made toward enlisting the active support of the traveling salesman. I am convinced that he is a prominent factor in the matter of getting profit, and feel sure that the practical suggestions that we will receive through the medium of these essays will have an influence on the future work of this association that will be in the tangible form of adding dollars and cents to the profit column, which are now recklessly and ignorantly thrown away.

WORK OF HIS ASSOCIATES.

When I accepted the position of president, with which you honored me a year ago, I promised that I would discharge its duties to the best of my ability. I stand before you now to say that I have kept that promise religiously. My only regret is that the ability at my command was so small. I cannot close this address without a few words to those who have been associated with me in the work. Your Executive Committee have been prompt and thoughtful whenever consulted, which has been with great frequency. Individual members who have been requested to serve on committees have done so cheerfully, although there have been some cases where it was only done at great personal inconvenience. I have been the recipient of much encouragement, both by letter and in personal interviews, from those whose opinions and counsel I value highly, and for all the assistance and encouragement, I desire now to publicly express my thanks.

I also wish to say a word for our secretary-treasurer. I hesitate somewhat to do so from fear that my encomiums may enlarge his head to the same dimensions now to be found at his waist, but will run the risk. He has been faithful to his duty, has been instant in season and out of season, prompt to respond to every call. His service is not perfunctory nor machinelike, but intelligent. He loves the association. He loves the work. Can I say more?

In conclusion, gentlemen, let me once more call attention to the wonderful progress we have made during the five years of our existence, and impress upon you that the next five years are ones of great possibilities for further progress, if you will avail yourselves of it. Your officers are your servants, you must instruct them as to your wishes, you must hold up their hands, you must act through them on all matters that are of general interest. Do this, and I venture the assertion that another five years will find your association stronger, more respected, more efficient for good than it is to-day. I thank you for your attention.

Secretary-Treasurer's Report.

The annual report of T. James Fernley, secretary-treasurer, was presented, as follows:

The closing of this, our fifth year as an organization, finds the writer standing before you for the fifth time, a living monument of your toleration and forbearance; qualities which are very much appreciated by him, and which he hopes you will continue to nurture for some time to come.

The past year has certainly been an eventful one, as you all fully realize. Conditions entirely novel have

arisen, and have required mature thought and calm, deliberate judgment to meet them.

Our report should very closely outline our steps and missteps during the past year, but we have concluded to omit the latter and treat only of the former.

COMBINATIONS OF WEALTH AND INTELLECT.

With the birth of the calendar year came into existence a large number of combinations of manufacturers, all having for their object the obtaining of a proper recompense for the labor and capital employed in their various enterprises. The combination of wealth and producing power, although enormous, did not so much appall us, but when we came into personal contact with the gigantic combination of intellect we were appalled, and yet our secretary-treasurer did his utmost to secrete his great embarrassment through coming in contact with these wonderful combinations of gray matter. We found these organizations of manufacturers, whether in the shape of amalgamated companies or pools under the control of a commissioner, ever ready to hear an official expression of your desire as voiced through your "humble servant."

CONFERENCES WITH COMBINATIONS

Specially called meetings have been held with nearly all of the manufacturers interested, at which times, whether alone or accompanied by your president and committee, your secretary-treasurer has always been afforded every opportunity of placing before these interested gentlemen your most reasonable requests.

THE AMERICAN STEEL & WIRE COMPANY.

The largest of these organizations, and the one which can possibly be pointed to with the greatest pride, is that of the American Steel & Wire Company, a concern whose output is estimated to exceed $50,000,000 per annum. It was first thought that this aggregation of capital would attempt economical means even to the extent of adopting what would have been the false economical principle of distributing their own product direct to the retailer and consumer, yet when we had our first interview with the main officers of this organization we were given to understand that they were only too glad that there was an avenue through which they could distribute their goods to the retail buyer and consumer, and further, they expressed delight that there was an organization of these distributers which was in the position, through its officials, to convey to them a proper idea of the ways and means through which this organized force of distributers could be best utilized by their consolidation.

We congratulate the American Steel & Wire Company on having adopted such a liberal policy, and hope that those who may control this organization in the future will pursue the same fair and liberal policy in the treatment of the jobbing trade.

THE AMERICAN TIN PLATE COMPANY.

You will remember that at the last convention of our association a special committee was appointed to confer with the promoters of this company, which was then in an embryonic condition; the results of this conference paved the way for a later one between your officers and the Metal Committee of the association, at which time suggestions as to the proper treatment of the metal dealers of the country were made and fully discussed.

We have had several conferences with the president, vice-president and sales agents of the American Tin Plate Company during the past year. More courteous treatment it would not be possible to receive at the hands of the warmest of friends.

An earnest desire has been expressed to carefully conserve the interests of the distributers of Tin Plate. At all times we have not agreed with the full details of the policy of the American Tin Plate Company, and we have been compelled to point out to them wherein their policy did not seem to harmonize with the views of those whom we represented. We recall two instances of this character—namely, the question of the legal conveyance of private brands to the American Tin Plate Company and that of the insistence of the acceptance of wasters with all contracts.

We will be favored during the convention with the presence of representatives of the American Tin Plate Company, and we believe that these slight differences can best be adjusted in consultation between the officers of the American Tin Plate Company and the metal jobbers here assembled.

THE AMERICAN BICYCLE COMPANY.

This organization has but recently been formed. We have had two extensive conferences with them. The conditions which have been prevailing, and indeed those which are now prevailing, are of a peculiar nature, and require handling in an entirely different manner than those of ordinary lines of goods.

This organization has shown a decided inclination to confer with us, and we hope that such members of our association as deal in Bicycles will receive fair treatment at the hands of the American Bicycle Company.

THE SHOVEL ASSOCIATION

This organization is on a different basis from the other companies alluded to, it being one of the large number of pools or combinations of manufacturers conducted by that peerless and fearless industrial organizer, J. H. Parks of Boston and New York.

This association of manufacturers is in the fourth year of its existence, and while the most sanguine of its members at the time of its formation rather expected the organization would require the services of the undertaker at the end of about two years, yet we are able to say that it is in most splendid vigor and bids fair to die of old age, rather than through assassination, suicide, or paresis.

Almost the entire output of Shovels in this country—approximately 400,000 dozen—is at the present time distributed by the Hardware jobbers.

At the time of the formation of the Shovel Association the conditions were different. But 52 per cent. of the output was distributed by the jobbing trade. These manufacturers appreciated the importance of the support of your organization. We are always invited to be present at the time of their meetings, and the Classification Committee, whose duty is to classify the trade, is made up of three manufacturers, who sit in conjunction with this association—your secretary-treasurer being accorded two votes out of the five.

This committee is working in absolute harmony. In every instance we have been able to show to the manufacturers that our contentions were proper, or they have shown us that the information which we had was not complete.

The differential provided for the jobbing trade is a liberal one.

We commend the Shovel Association for its very liberal treatment of the jobbing trade.

THE STEEL GOODS ASSOCIATION.

This organization is built on the same lines as the Shovel Association. It is yet in its infancy and some of the individual members have yet to fully appreciate the real purposes and objects of our association. They have also recognized us as part of the Committee on Classification, and we feel that eventually their plan will be so modified that better results for our association and themselves will be obtained and hence we can work together in most hearty accord.

THE AMMUNITION ASSOCIATION.

We have had several interviews with the representatives of this organization, and upon one occasion during the year a committee, duly appointed, waited upon Mr. Odell, the Commissioner, and Mr. Bruff, representing the Union Metallic Cartridge Company, calling their attention to what we considered the unfair treatment of the Hardware jobbing trade through the action of the Ammunition Association catering in such a pronounced manner to the wholesale grocery trade. We found that one of the leading wholesale Wooden Ware dealers of the country had authority to appoint agents for the Ammunition Association, and that his recommendation that certain grocers be placed on the salary list was almost equivalent to final action. It is with regret that we report that up to the present time we have not had a satisfactory reply to our numerous requests, and we feel that the time is about ripe for our association to take some action on this question.

There are many other organizations of similar nature with whom we have been treating during the year, but lack of time will prevent us from giving you full details at this time, and further, you have had during the year quite full explanations from our office.

INDIVIDUAL MANUFACTURERS.

We have interviewed upward of 250 individual manufacturers during the year, explaining to them the importance and objects of our organization, and in a large number of cases have gone over their lists of buyers with them, and pointed out the names of those whom we considered entitled to be classed as jobbers.

CATALOGUE HOUSES AND DEPARTMENT STORES.

We have been extremely successful this year in showing to the manufacturers whom we have interviewed

the effect of their placing this class of operators in competition with the legitimate dealers, both wholesale and retail. We have had in our possession at all times the illustrated catalogues and net prices which these parties circulate so freely to every farmer and mechanic sending a postal card request for one.

Be it said to the credit of a number of manufacturers that they have during the past year taken a firm stand on this question. I have already advised you of one manufacturer who had a business with a single catalogue house running into a large amount of money, who, after a two hour conference with the writer, displayed an order amounting to $8000 (a very profitable line of goods) saying: "It'll cost me a great deal to take this step, but I'll do it, and this will be the first order that I will decline. I am satisfied that the retail trade as well as the jobbing trade have aided in building up the reputation of my goods, and I'll not see any catalogue house assail them."

It recently came to our knowledge that certain agents of express companies throughout the country were acting as representatives of catalogue houses, having in their possession a catalogue, and soliciting orders from the consumers, farmers, mechanics and householders generally, and sending these orders to the catalogue houses, and undoubtedly being remunerated for so doing.

We have brought this matter to the attention of the leading express companies and have assurances that they will instantly stop such practice upon it being brought to their notice, and if, after the agent is warned, he continues it will cause him to be discharged in every case where the agent is appointed by the express company. The general agents of the express companies explained to me that in some instances they were compelled to take the agent of the railroad company simply because the amount of express business done at a given point did not justify them in maintaining an independent agency.

These gentlemen stated that even where this condition existed they would use their influence with the railroad company to prevent the agent of the joint companies from aiding one branch of their customers to the disadvantage of another.

If any members of our association know of cases where the railroad or express agents are acting for catalogue houses, they have but to put the secretary-treasurer's office in possession of the data.

CHANGE OF TERMS.

As you are all perhaps sadly aware, there has been a tendency on the part of some manufacturers to revolutionize the terms on which Hardware has for years been sold by removing the cash discount, and making the terms net cash 30 days. Feeling that there is considerable doubt as to the ability of the jobbers of the country to make these terms with their customers, we have done our utmost to head off this movement. Some manufacturers have already recalled their action, and have notified us to that effect, but some other prominent manufacturers still adhere to the arbitrary position which they have assumed.

This is a matter which has been scheduled on the official programme for discussion, and we await the decision of the association as to future action.

THE SALESMAN'S DEPARTMENT.

We have noticed during the past year that the members of our association are paying more attention than ever to the management of their sales department. This is very gratifying, indeed, not only to the association, but to your secretary-treasurer, because he brought this weakness to your notice two years ago, after having visited almost every member of the association, from one end of the country to the other.

We feel that there is an immense field of usefulness open to us in connection with the sales department. During the year we have several times addressed the head of the sales department, and we feel the beneficial results.

Upon two or three occasions we have communicated with the traveling salesmen of the country through the head of the sales department.

THE PRIZE ESSAY FEATURE

has occupied more or less attention during the past sixty days, and has been in line with our other work in this department. We have received a total of 80 essays. These were contributed by representatives of 33 houses, and we find upon a tabulation of the essays that those concerns who have given the best attention to their sales department have had the largest number of men interested in this essay feature.

We are all aware that the traveling salesmen of the country who represent Hardware houses are far above the average for general intelligence, and if we had not formed this estimate before, the careful reading of these essays would undoubtedly lead to this conclusion.

We have tabulated the "Difficulties of Selling Hardware at a Profit," as outlined by these 80 gentlemen, and also the "Remedies" for the same, with the following results:

Difficulties.

Making reduced prices on certain goods in order to start business or make a favorable impression	23
Vindictive competition	23
Catalogue houses	22
Incompetent traveling salesmen	18
Competition of small jobbers	15
Manufacturers' competition	12
Allowing salesmen to adjust claims	10
Seeking unnatural territory	9
Taking into consideration volume of business instead of net profit	8
Making sales far in advance of the season	6
Making personal rebates	1

Remedies.

Send out only educated salesmen	19
Fix your own selling prices, and adhere to them	18
Have manufacturers refuse to sell all price cutters	18
Forbid salesmen to quote goods in competition with goods already sold	17
Manufacturers refrain from entering into competition with their jobbing customers	16

We hope during the ensuing year that this avenue of education will be closely followed. The ground is ripe for a rich harvest, and undoubtedly the traveling salesmen connected with the membership of our association, whom we estimate number at least 2500 men, are willing and anxious that conditions should be improved.

INCREASE IN MEMBERSHIP.

At the last convention we reported 165 members. We now have a membership of 177. We have had a very large number of applications for membership, which are still under consideration. It has been the policy of the association to admit to membership only those who would actually add strength to the organization.

HARDWARE BROKERS.

We are most happy to state that as a result of our efforts during the preceding four years this element has almost entirely been eliminated. We know several of these gentlemen who have retired from business, and are now in the employ of our members, or representing manufacturers, direct to the jobbing trade.

CORRESPONDENCE BETWEEN MEMBERS.

We find room for improvement among members of our association regarding an exchange of views as to selling prices. There is still some lack of confidence which must be overcome before we can reach an ideal condition. Some of our association imagine that competitors would make improper use of such letters, but we believe that the friendly relations now existing would justify the retraction of such an idea.

However, we are still ready to act as the medium through which one house can correspond with another, but we urgently recommend direct communication.

LISTS AND DISCOUNTS.

Frequently during the year we have been consulted by manufacturers as to the most desirable method of arranging lists and discounts. We have always stated that our members preferred high lists with varied discounts.

This advice has been given only after a very free expression of your views through the secretary-treasurer's office. A very few of our members prefer other methods, but as these few give us as a reason the desire to save extra trouble in figuring, we can only say to such that the recompensing advantages are so numerous that they should waive this objection.

I dare not place in this report any figures showing the number of complaints that have reached your secretray-treasurer of cut prices on the part of each other. Their number is very large, but it is a matter of great satisfaction to state that at least 95 per cent. of these rumors have been ascertained to be entirely groundless. In many instances we have been informed by one house that if their competitors have undersold manufacturers' established prices they propose to immediately follow. We

have written or wired that no action of this kind be taken until we had a chance to investigate. We have, by prompt action, proven within a few hours that reports were untrue, and the result has been that market prices have been maintained.

We claim this feature of work is advantageous to the manufacturer, because his goods are made agreeable for others to handle; to all jobbers, because a proper profit is accorded, and to retail dealers because they are not compelled to pay more on several items in their bills because a cut is made on one item, also because stocks in hands of retailers are not reduced in price by such cuts.

Let it be thoroughly understood by all purchasers that the ordinary expenses of conducting business can only be met by a legitimate profit on all sales, and that a house which cuts on a few leading items is sure to make up the loss by an inordinate profit on others. In other words, every article which is sold should pay a profit over expense of selling.

A FEW STATISTICS IN REGARD TO WORK.

We were accorded a brief vacation by the Executive Committee, with the understanding that our correspondence should not get in arrears, so during the secretary-treasurer's season of rest he dictated 616 individual letters.

During the past year your humble servant has traveled 20,850 miles, which is about the average distance traveled in previous years.

During the five years of our encumbrance of this office we have traveled a distance equal to four times around the earth, and yet we are not tired, but quite willing to continue going over the earth in your interest for the good of the trade in general and the slight consideration involved.

We have labored during the year to the best of our ability, having only one subject uppermost in our mind—namely, the success and welfare of the National Hardware Association.

We have been away from our office 80 days, appearing before organized manufacturers and urging the principles of our organization upon our membership.

Local and sectional associations have been met whereever possible. We have been most cordially received on these occasions, not because of our personality, but as the representative of a great commercial body.

Our office force has been busily engaged all year. To give you some conception of the amount of correspondence passing from our office to manufacturers and members, we would state that we have used 56,840 sheets of paper and 22,650 stamped envelopes.

We have addressed 112 letters to the entire membership, and 16 to the metal dealers only, and have dictated 8850 individual letters.

During the first four years of our organized effort the president and secretary were in very close contact with each other at all times, and having thus been in daily consultation, it was a question in the writer's mind whether it would be possible to as acceptably conduct the work of the association separated at a distance from the president, but as a matter of fact, there has been no time during the year when we felt that the work was embarrassed by reason of the fact that the president and secretary were residing in different cities. As a matter of course, we have had very frequent consultations, and daily interchange of communications.

Your secretary-treasurer has received most generous treatment at the hands of your president. During the year there has been absolutely no friction between us. The relations have been most cordial, and as the executive officer we have endeavored to execute the plans as directed by the administrative officer.

The policy of the association is so clearly defined that in a large number of cases the secretary-treasurer has but to follow the precedent already established.

We stated at the beginning of our report that our missteps should not be mentioned. They have not been. We may have made many, but in this presence we do not propose to admit it.

There is a wide field of usefulness open, and as long as it is your wish that the writer serve you he is at your command.

Henry B. Lupton's Address.

On being introduced by the president, Henry B. Lupton of Pittsburgh, chairman of the Manufacturers' Reception Committee, spoke as follows:

A year ago I had the honor of making a few remarks before this association, and referred to the marvelous growth of the export business in steel and iron products. From the estimates made by the United States Treasury Department, permit me to bring the figures down to date.

EXPORTING IRON AND STEEL PRODUCTS.

In 1880 our imports of iron and steel products were about $70,000,000. This year this will have been reduced to about $12,000,000. Our exports in 1880 were about $12,000,000. This year they will reach the magnificent total of between $95,000,000 and $100,000,000.

Such a volume of trade in export of iron and steel was not dreamed of a few years ago. How much these figures tell of American indomitable pluck and American enterprise. All lines of American Hardware and iron products are forging their way into the markets of the world, and the American manufacturers, fully appreciating this situation, are determined to secure and hold that trade at all hazards, and have placed their able and bright men in charge of the export departments.

SECURING OUR SUPREMACY.

This is, of course, a matter of congratulation to all true Americans; but, gentlemen, let us not forget that 85 per cent. of this tremendous tonnage is carried to its destination in foreign bottoms and under foreign flags.

Before feeling that this trade is forever secured we must have an American merchant marine, the Nicaragua Canal, a Pacific cable and an international banking system.

A UNITED AND PROSPEROUS PEOPLE.

This last year of the century marks a great epoch in our political and commercial history. Never before were our people so united and prosperous; no longer are sectional lines drawn, except to show the geographical divisions; no longer do we hear of the East as against the West, nor the North as against the South, but of one united people, true and loyal to that flag, and ready to fly to its defense whenever it is unfurled for the protection of our national honor, or in the cause of righteous humanity.

THE GRANARIES OF THE WEST

are bursting forth with the plenitude of harvest. Two thousand million bushels of corn. Six hundred million bushels of wheat, and the new South, with its now diversified products, comes forward with its 10,000,000 or more bales of cotton, and that cotton worth $8 per bale more than last year. All these added in 1899 to our country's wealth.

It is estimated that the world's production of iron will this year exceed 35,000,000 tons. Of that tonnage nearly 40 per cent., or about 14,000,000 tons, will be produced in the United States.

MIGHTY PITTSBURGH.

Within a radius of 60 miles from where you now sit are assembled the ore and manganese, the coal, coke and limestone that produce 40 per cent. of this country's tonnage. In this Pittsburgh district, the greatest manufacturing center in the world, every furnace, every mill and every factory is running to its utmost capacity. Labor is paid at largely increased wages, and I believe the financial returns are satisfactory to those concerned.

Fully recognizing the magnificent manufacturing centers East, West and South, Pittsburgh sits securely intrenched in her position, and to-day makes the market prices for the world.

It is eminently fitting that this association should hold its last meeting of the century in this city, and help to celebrate the greatest year of Pittsburgh's progress and of Pittsburgh's prosperity.

A CORDIAL WELCOME.

As chairman of the Reception Committee permit me to tender to you in behalf of your brother Hardware jobbers of this city, and in behalf of Pittsburgh's manufacturing interests, a most cordial and hospitable welcome. Everything that is in our power will be done to

make your visit both pleasant and profitable; and, as you turn your faces homeward on next Saturday, and as we "speed the parting guest," may you carry with you lasting and delightful recollections of your fifth annual convention.

COLLOCUTION.

An interesting feature of the morning session was a collocution on the subject of "The Changed Conditions; Are They Likely to be Permanent?" A number of prominent manufacturers were down on the programme to speak, but some of them were prevented from attending. The discussion of this important subject was initiated by W. T. Graham of the American Tin Plate Company, who addressed the convention as follows:

W. T. Graham's Views.

I have not had any previous experience in anything of this kind, and I may be somewhat embarrassed in attempting to talk in so large a body of prominent business men as assembled here. I cannot expect to say anything new, and if I am able to influence in the slightest degree the opinion of any gentlemen present it would be by a very plain presentation of the way or the manner in which this matter presents itself to one who has had considerable experience in manufacturing and distributing goods, and who fully appreciates that any business policy to be successful and lasting must accede to the reasonable demands of the people we serve. Therefore, if any new condition is to be permanent, it seems to me, it should be reasonably satisfactory to the customers of the concern that adopts it—that it should be on the whole beneficial to the trade in which it exists.

THE ENDURING POLICY.

I do not believe that any policy, or anything that is generally objectionable to those most interested, in this country at least, can endure.

Now I shall assume that the changed conditions referred to are those brought about by the larger industrial organizations, and I conclude that their policy and their methods must be reasonably satisfactory to the gentlemen of the National Hardware Association.

I do not mean by that that any single gentleman may not have some objection to some one detail of the policy of the company, or that the policy of the company may be perfectly agreeable to all you gentlemen. I imagine the object is the greatest good to the greatest number, and that if the policy of these companies is such as will better serve that end than it was served under the old order of things these companies have some promise of permanency as a result of that approval upon your part.

CO-OPERATION OF ASSOCIATION AND MANUFACTURERS.

Human ingenuity could hardly devise any plan or plans of selling or distributing goods that would justify you in departing from what I presume is one of the purposes of your organization—that is, bringing about an amicable understanding with manufacturers from whom you buy, and in that way helping yourselves, while indirectly you help them.

In what I may say later I want it understood that I had in mind a policy of my own, and if it does not accord altogether with other companies who are represented here, it will be understood that I have in mind our policy.

REDRESS OF GRIEVANCES SIMPLIFIED.

As one of the new conditions that have been brought about by the consolidated companies, and which aid in answering the inquiry of the subject, I submit—closer relations of manufacturers with representative associations or their customers. I believe you will recognize the futility of efforts in the past on the part of an association like this to secure redress of grievances by appealing to almost numberless companies.

How is it now? Your officers and committees are welcomed by these larger companies, and though you may not be able to procure their acquiescence in all your requests, every consideration is given to them, and the promises that are made are conscientiously performed.

UNIFORM PRICES AND TERMS.

Another new condition is uniformity in price and terms. Now I know how hard it is for the buyer to buy from many hard years' experience in the art of gaining concessions. I have enjoyed the fancy that one feels when he has outdone his competitor in the purchase of goods; but I have had the mortification of discovering at some later date that I was not the favored one that I thought.

UNIFORMITY OF PROFITS.

There is still another new condition that I think is promised, if not attained, by these larger companies, and that is the uniformity of profits on goods. I think that when a man is selling goods at a cut price he robs himself, if the price ordinarily obtained for the goods is a reasonable one; but when he undertakes to gain a business by cutting the quality of the product he robs his customer, and the demoralizing results from anything of that kind are much more lasting and dangerous than that of simply cutting a price, which is a matter for every man to decide for himself; but I think when he goes to cutting the quality of his goods that he is robbing his customer and taking something from him for which he paid. Now I believe that these larger compaines will create standards of quality that can be depended upon more than they could have been depended upon under the old *régime*, when every company had their own standard.

NEW CONDITIONS ARE BENEFICIAL.

There are many other ways in which new conditions have been brought about by these consolidations. It is not necessary for me to refer to them. I think they will suggest themselves to you. I believe that you will appreciate that in a great many respects these new or these strange conditions that have been brought about by the consolidation of independent companies, or by the organization of a large industry, are beneficial.

UNBUSINESSLIKE METHODS IMPROVED.

Now all this may have seemed somewhat foreign to the subject to you. I think it is not. I have not any answer to make as to the permanency of the changed conditions. I only wish to suggest to you one line of reasoning which might help you to make up your mind as to the permanency of these new conditions. I wish it would be the general sentiment of the National Hardware Association that these conditions have improved many unbusinesslike methods that ruled in the past; that there is a probability of permanency in the new ones.

Gen. W. H. Withington's Address.

Gen. W. H. Withington, president of Withington & Cooley Mfg. Company, Jackson, Mich., was the next speaker. He spoke as follows:

Next to the curiosity about what a collocution might be, I presume there may have been some curiosity as to what kind of a looking fellow a collocutor might be. I hardly recognize myself in this capacity, and I don't know whether I shall be able to collocute according to the picture which your humble and conscientious secretary drew in his imagination when he dug that word out of the dictionary, but I will address myself to the task as best I may.

First, Mr. President, let me say—I think I ought to say, or some one of us ought to say—that I desire to express the appreciation of the Manufacturers' Association to which I belong, and possibly of others, of the courtesy of your great association in giving us a voice in these discussions, and welcoming us to your meetings.

Now, Mr. President, I recognize very well that the time is limited; that you have been sitting here for some time and that some members are getting impatient, and

I shall endeavor not to amplify, but to condense, what I may have to say upon the subject that is now before us: "These changed conditions; are they likely to be permanent?"

THE NEW CONDITIONS.

Now in considering this it comes naturally to my mind to perhaps make a statement of what the new conditions are as they appear to me. I should name:

1. A settled standard of money value;
2. Enormous excess of exports over imports;
3. Abundance of money;
4. Great industrial activity, and enormous production, and still more enormous consumption; demand in excess of supply;
5. Naturally comes higher and higher prices. There also naturally follows and has followed shorter terms of credit and stricter conditions imposed in all contracts; and
6. A condition that is so rare and entirely delightful to us manufacturers—a change in the position of the seller and the buyer—the seller on top, the buyer the under dog, and I must say that he submits to his new condition with the most remarkable complacency.

CAUSES OF THE NEW CONDITIONS.

Now if this is a fair statement of the new conditions, or some of them, are they likely to be permanent? Well, I take it, Mr. President, that that term is used relatively, and not in its strict sense; that none of us would expect or would undertake to predict an absolute or a continuous permanency, but we are all of us interested, deeply interested, in the degree of permanency with which these conditions may last, or extend. Now, it seems to me, Mr. President, in considering this question, I naturally turn to inquire what has brought about these new conditions; and if we can settle to some degree in our minds that question we may be able to form a little more definite opinion as to their permanency, and of the conditions which have brought them about.

To my mind, there stands first and fundamentally the settlement of the money question; the relief of this country from the menace of free coinage, and all the chaos and revolution, financially, which most of us believe would be involved in the success of that scheme.

FREE COINAGE DEAD.

Now I trust it is not verging upon politics to say that, in my opinion, and I believe in the opinion of most of these gentlemen here present, that question which had hung over us so long as a pall, as an incubus, as a check upon business enterprise and ventures—that that question was practically settled by the election of 1896. There is much legislation which needs to follow in order to put our currency and the money of this country on a recognized and legal basis, as well as a practical and commercial one, but I have faith to believe that that will follow.

FAVORABLE CROPS.

Now next were the favorable crops in this country, beginning in 1897—large crops, and fortuitously with it, almost at the same time, short crops abroad, resulting in an enormous demand for the cereals of this country and great exportation and large prices.

GOLD.

Now, Mr. President, to these two things add the determination of the money question, restoring confidence, released for circulation a large amount of gold. We began to see it in the circulating medium of the country. Up to that time it had been a curiosity to a large degree. It released a large amount of gold. The increase of exports over imports brought in a large influx of gold to add to the amount which was released, and put into circulation in this country. Then in conjunction with that and closely following it was the increase in the production of gold through mining throughout the world. It was officially stated that the gold in this country on hand on the first of November was one billion, fourteen million and some odd thousands of dollars—the first time in the history of the country that it had ever passed the billion mark in its quantity of gold. Most of you are familiar with the fact that the increase of the world's stock of gold has gone on with remarkable rapidity and to an enormous extent.

SHORTAGE OF MONEY.

The money feature, I think, cuts perhaps more of a figure than we have been inclined to think of late; and if you will recall the past you will remember that one of the great drawbacks that seemed to hinder the development of business and the exercise of business was the shortage of money; not altogether an actual shortage, but largely a shortage for want of confidence upon those who held it to put it out. Now the country itself was in a position to rapidly respond to these new conditions. There was a condition, if you will recall it for a moment, a long series of years of depression and repression; curtailment of expenses; farmers poor; everybody keeping close down in their expenditures, and nobody embarking in new enterprises. So that when these new conditions came, of which I have spoken, the settlement of the money question and the large increase of exports and increase of money, we were in a condition for a rapid, strong and vigorous rebound from the long years of scrimping and careful buying.

OTHER CAUSES.

Now these may be considered as natural causes. There were some others and among these others I should place the organizations—I don't now speak of combinations and consolidations—but of the organizations like your own association and like the manufacturers' associations; and what have these accomplished? To my mind they have brought about an

EDUCATION IN BUSINESS METHOD.

They have brought out the best knowledge and the best practice of the best men in these organizations to those who had perhaps given the question less thought and study and had had less experience in the handling of their business. It seems to me that has been one of the greatest causes of these better conditions—the education in better business method, such as your association and many of the manufacturers' associations have brought about. Now, then, we may call these in the main, as most of them are, natural causes.

AN ARTIFICIAL CAUSE.

Then there has come into existence an artificial cause, if I may so term it—the creation, wonderfully rapid creation of consolidations and combines, such as my friend who has preceded me represented and upon which he dwelt considerably in his remarks. The year 1898 saw the organization of corporations, or combinations of this class, representing $900,000,000. In the first half of 1899 there were organized corporations of this class capitalized at $3,000,000,000. Why, it is almost past comprehension, it has come upon us so suddenly. Nor would I undertake to predict what the consequences might be of these organizations. I leave that for the discussion of those perhaps who are more directly concerned than I have been.

PERMANENCY OF CONDITIONS.

Now if I have at all fairly stated the conditions and the causes which have led up to them, we are brought to the consideration of the question of their permanency, and I approach that with a good deal of modesty. I have undertaken sometimes in the past years to make predictions and thought I was showing a great deal of wisdom when I stated as I had several times to those associated with me in business that we had reached a period of permanent lower prices and closer margins and should never expect to see again—those of us who passed through the periods of war and through times of disorder—should never expect to see again a period of excessive profits, and I don't know but that some of you must have realized that I was a false prophet upon that.

SOME OBSERVATIONS.

Now, Mr. President, I shall not undertake to tell these gentlemen—I presume they would pay me quite a large sum of money if I would tell them—just how permanent these conditions would be. I don't propose to go into that very thoroughly. I only express my opinion that they will remain for some length of time. That is about as far as I will undertake to go. I think they will remain during the next year and possibly longer; and in forming that opinion in my mind I recur to the conditions, which somewhat resemble the boom of 1879 and 1880. You will recall—the older members—the fact that the time for resumption of specie payments was fixed by law as the year 1879. Everybody feared what might come from the undertaking to resume specie payments. They dreaded it as some unknown quantity. It had a depressing influence upon the previous years—to 1879 and 1880. In recurring to some facts and figures in my business I find that the price of Steel, the kind of Steel which is used in our business, dropped for several years preceding 1880. I am not going into figures very much; but I notice that which had been selling at 6 cents dropped to 4⅜ cents in 1879; it recovered in 1880 to 6¼ and 6½ cents. It held those prices during 1881 and 1882, but again dropped in 1883. I note that the prices of our goods—the goods which I manufacture, Steel Goods, Forks, Hoes, &c., advanced in 1880 and that they were held for two years following that, and the drop that came after that was a monetary condition which we are not likely to experience again. If I had time I should be glad to discuss somewhat the bearing which I think this has. I don't feel that I could do it justice in the time.

Mr. Withington then made some comparisons showing that prices in 1880 were 20 per cent. higher than the advanced prices of to-day.

Address of Julius C. Birge.

With General Withington's remarks the morning session came to an end. In the afternoon after an executive session the collocution was continued, the first speaker introduced being Julius C. Birge, president of the St. Louis Shovel Company, St. Louis, who spoke as follows:

My first impulse before getting onto the platform is to express my hearty appreciation of the cordial welcome which your association has accorded to the manufacturers here to-day, and which I am sure deserves at their hands a full response for any fair request which your association may make of the manufacturers. The gentlemen who have preceded me have covered certain grounds of this question, which is, perhaps, ambiguous, if not ambiguous, it is broad; but I am limited—the few words which I may speak—to that phase of the question which pertains to the general commercial conditions of the country, and to the present crisis. I will promise to be brief. The gentleman who preceded me in speaking upon this question referred very appropriately, I think, to the difficulty in answering this question. It is exceedingly broad and far reaching. If it be true that the hand which points to the road to wealth brings friends when it beckons, he among you who can answer the questions which are before you will quickly find a host of friends at his side; and I think you place us who speak upon this question in a position very similar to that in which Shakespeare's Touchstone was placed by Rosalind, when she said to him, "Now, Touchstone, unmuzzle your wisdom."

THE FIRST CHANGE IN PRESENT CONDITIONS.

With reference to permanency of conditions and of prices we cannot judge the future from the past with absolute certainty, but it seems to me that the light of past observation ought to be of very great value in forecasting the future; and this light leads to the inevitable conclusion that there is nothing permanent this side the river, and by the river I don't mean the Ohio either. If this be correct, it would seem to be that the greatest profit in this discussion arises from determining what will be the first change in conditions, admitting that there must be, in the near future, some change in present conditions.

STEEL AS AN INDEX.

I believe that it is pretty generally recognized that the key to the Hardware situation is Steel. While other articles are factors, yet this commodity seems to have been recognized for many years as an index to trade conditions, and that high prices of Steel have almost universally distinguished or been a feature in times of commercial prosperity; and the reverse is also true. Other metals, from past observation, have not been as distinguishing as Steel with reference to general trade conditions.

WHAT HAS BECOME OF THE ENORMOUS OUTPUT.

To arrive at any conclusion with reference to the effect of Steel on the present conditions, it would be of very great interest to know what has caused the present advance, and where the present enormous output has gone, and it would require a great deal of time to do this, and I don't believe that I could do it if I should undertake to, and I would be placed perhaps in a position similar to that in which another searcher after truth was placed, a man up in New England. A tanner appears to have desired to secure a sign, which should in some way be fitting to his establishment, and he conceived the idea of taking the tail of a calf from a calfskin and inserting the butt end of that tail through a knot hole beside his office door. Very soon a stranger—a venerable gentleman—passed that way and observed that tail floating in the wind, and he watched it for a long time until the tanner approached, and, addressing the gentleman, the tanner asked him, "Do you want to sell hides?" "No." "Do you want to buy leather?" "No." "Are you a merchant?" "No." "No," he said, "I have been watching here for nearly an hour, endeavoring to ascertain how that calf got through that knot hole." I have been watching very carefully, endeavoring to determine where this enormous product of Steel had gone.

THE FIRST INDICATION.

The first index, or the first indication, of an approaching change in conditions will be overproduction and overbuying. I would like to leave that perhaps for a moment, understanding that coupled with it is the proposition of cutting prices, which is a natural sequence to overbuying, but there is one other factor which it seems to me would surely produce a revulsion in present conditions, presuming, of course, that the present conditions are prosperous, and that condition would be a change in our existing monetary system, so far as concerns the basis of our money values.

DOCTORING CONDITIONS.

Now if our conditions are healthy, and I believe it is recognized that they are, the question arises, will doctoring do them any good? A man in physical health would be regarded as unwise if he accepted from a quack some nostrum simply for the purpose of adding to the market of that particular remedy.

THREE YEARS AGO.

A little more than three years ago thoughtful men looked out upon the depressed condition of our country, as it then existed, and were very solicitous for the future. They looked at our abandoned factories in which no wheels were turning; they saw the thousands of cars lying on their sidings unused; they saw steamers lying at their wharfs, with no fires under their furances and no freight to carry. They saw mercantile houses with shutters at their windows, and they recognized that the circulating wealth of the country was in hiding in the safety deposit vaults, and they stood very much as the prophet Ezekiel stood, when he looked out upon the Valley of Bones, and exclaimed, "Can these dry bones live?" But when in that day in November of three years ago the threat of financial tinkering was removed it seemed as if the silent embodiments of power were im-

bued with new life. Workmen thronged the factories; the money came out from its hiding places, and business took on a revival and an impulse which, as has been stated this morning, has continued to increase to the present time until your journals tell you that for the month just closed the commercial and financial transactions of the United States were greater than have ever been known in the history of this country.

OVERPRODUCTION AND OVERBUYING.

To me this is very suggestive. If these two points which I have briefly mentioned are worthy of consideration it seems to me that they should be taken broadly; that is, that overproduction and overbuying means not only the placing in our warehouses of merchandise which may become a burden and lead to a cutting of prices, but it means a drifting away from the habits of economy into fields of speculation—that staple finances, as applied to the permanent conditions of the country, is in line with those fundamental principles of honesty and fair dealing which are recognized by solid business men, like these here, as underlying a reliable, permanent, continuing, successful business. More than this, it seems to me that the surest way to prevent a revulsion of good conditions is to expect it.

J. A. Carter

of the American Bicycle Company followed Mr. Birge and discussed the question as follows:

The greatest problem of human life is, After death, what? For ages this problem has confronted mankind, and as yet no man has been able to satisfactorily solve it. So in the business world for the past 50 years, in fact ever since this country has been making rapid strides in development, demonstrating to the world that we are fast becoming the greatest producing country of the age, both in agriculture, mining and manufacturing, the question ever uppermost in the minds of the manufacturer and merchant is, Are present business conditions likely to continue? And it matters not whether the times are good or bad, the same question is ever in his mind. If good, he wants to know so as to take the largest possible advantage of an advancing market. If bad, he is equally anxious to know so he may time his sales to meet the depressed condition. This world is full, and always will be full, of people of pessimistic ideas; always depressed; always looking upon the dark side; always fearing some dire calamity.

OPTIMISM THE LEVER.

On the other hand, the one thing that has been the main influence in bringing our country to the front and its present high standing among the nations of the world has been that of the men who are able to look forward into the future; who may, perhaps, be called optimistic, who, having the courage of their convictions, invest their money, their time and their energy in the building up of an industrial business that shall command the respect of their fellow citizens and the attention of the world. It is to this class of people that the world owes much of its progress.

AGE OF EXPANSION.

We are to-day living in what may be called an age of expansion—expansion not only in territorial acquirements, but in all lines of business. Much is being said by the daily press and by politicians in regard to so-called trusts. The principle that underlies the forming of a copartnership between individuals is identically the same principle that underlies the forming of these large corporations.

As I have said before, we are living in a so-called age of expansion. In working out its destiny mankind never halts.

TRUSTS A BOON TO MANKIND.

No innovation is ever attempted in a day nor without opposition. This opposition was made manifest with the advent of machinery in the place of hand labor, and we believe to-day that, broadly speaking, the so-called trust is destined to prove itself one of the greatest and best of modern improvements, and that which so many are crying out against will within the next five years demonstrate to the world that it is a boon in every way to mankind. The business conditions to-day are largely due to its influence and its working in the direction of a larger industrial organization, thereby tending to reduce the cost of manufacturing to a minimum, keeping our factories running throughout the entire year, enabling us to reach out into the markets of the world, dispose of our surplus product, and do away with one of the most serious evils that the business world has had to contend with for the last 20 years, that of overproduction.

WHAT MAY CAUSE DEPRESSION.

The business conditions of to-day are probably more favorable than any which have existed in a long period of years. As to whether they will continue or not lies entirely with the American people. If pessimistic ideas and views are to predominate, if the cry of imperialism is to hold sway and attain the ascendency, then we may look for a period of depression such as we have witnessed in the past—the depression of '57, '73 and '93, a period in business which marked the ruin of thousands of honorable business men, and which would accomplish the same result in the future.

ON THE OTHER HAND,

if we can have that feeling of confidence which the business world now enjoys, if we can have a broadening of our markets, reaching out and permeating the whole world, continuing to assume the ascendency over competition in the foreign market, then we shall have not only a continuance of the present business conditions, but an era of prosperity such as this country has never before witnessed.

As for myself, I believe in the American people, in their good judgment, in the onward march of civilization, in expansion, territorial and business ties, and as I look down the corridors of time and with prophetic ken behold the grand possibilities of the future with the united country that knows no North, no South, I see not only a continuation of present business conditions, but a condition better and open to greater possibilities than any business condition this country has ever been permitted to enjoy.

George A. Baird

of the Republic Iron & Steel Company was the next speaker. He said:

These changed conditions, are they likely to be permanent? Of course not; nothing is permanent. Many, many years ago one of the old Romans, who preceded us on this busy earth, said, "*Tempora mutantur et nos mutamur in illis*," which in Anglo-Saxon reads, "Times are changed and we are changed in them." The same words exactly describe the business conditions which the student of commercial science is studying to-day. There is nothing permanent, except taxes. One of the profoundest philosophers the world has produced, Herbert Spencer, has defined life itself to be a combination of changes. I believe it was King Lear—at any rate, it was one of Shakespeare's characters—who said, "World, world, but that thy strange mutations make us hate thee, life would not yield to age." These changed conditions will change again. The period of their operation, and the term of their duration, are the subjects which engage our thoughts this time. The man in business does not ask himself so much, What will the harvest be? as How long will this harvest last? When will overproduction, or underconsumption, or lack of confidence, or some other cause or causes which destroy good times and bring in their place what we call hard times, again assert themselves?

This is both an interesting and important subject. The business men who recognize that the "tides in the affairs of men" are not of frequent occurrence and who "get in" on this boom will make a great deal of money. Those who stay in too long may lose a great deal of money; but, on the principle that "it is better to have loved and lost than never to have loved at all," I assert that he who stays in too long will not have made so grave a blunder as will he who does not get in at all.

We meet in our daily walk men so devoid of the sanguine element that they are almost willing to assert that there isn't any boom; at any rate, if they admit there is a boom you see them reaching with both hands for the bell rope to ring its death knell.

"I IS AND I ISN'T."

One of these days we will be discussing this boom as one of the "has beens," and our friends will be in the position of the old negro. His name was Moses. He was the butt of many jokes. A large part of his occupation in life was to take care of a law office of a well-known Southern attorney, Colonel Terrill. One morning the colonel startled Moses by asking him if he had ever seen an elephant. "Has I ever seed an elephant? Well, sometimes I says I is, and sometimes I says I ain't ever seed an elephant. You see, colonel, it happened dis way: I was working down on de Widow Simkin's old yeller mule, 'Liz,' to take a turn of corn down to de water mill. I was riding along astraddle o' my turn o' corn, and singing a hymn, and I dun forgot all about a circus coming to town dat day. All of a sudden old 'Liz' frowed down one of dem long years of hern. Thinks I, old gal, what's the matter with you; and before I got dat think out old 'Liz' frowed down de oder year; and den she bowed up her back and stuck down her head and kicked up her heels, and, colonel, by de time I got de turn of corn off my neck and de dirt picked out of my eyes, the procession had done gone by. And that is why I sometimes says I is and sometimes says I isn't seed an elephant."

Prosperity's procession will have gone by and our friend will not know whether he has seen it or not.

LONGER PERIOD OF ACTIVITY AND PROSPERITY.

The most competent judges with whom I come in contact believe that business will be good for some years to come, and they are able to give substantial reasons for the faith that is in them. Their reasons, I assume, are "the changed conditions" referred to in the subject I am discussing. Some of these "conditions" are altogether new in this country. Home supplies of manufactured products have been depleted, and factories and middlemen have been kept busy for several months running overtime to make up the deficit.

Heretofore in making up the deficit the momentum acquired in doing so has caused prices and production to go too far and make a surplus to quickly depress and demoralize the market. If we were to ask an artist to draw a profile illustrating the business history of this country in your time and mine, that profile would show a series of high elevations followed immediately by deep depressions and separated by long stretches of prairie, quite swampy in places.

I have already said enough to indicate to you that I do not believe that the future profile will be one long, level, elevated plateau; however, I do believe that the high places are going to be much broader at the top. I believe that our periods of activity and prosperity are going to be of longer duration. I believe that the

FOREIGN DEMAND FOR OUR PRODUCTS

is going to fill up the swampy places and keep the business of this country on a level of prosperity and profit for years to come, and indefinitely defer the time when the home market will be glutted as it has been in the past. That it will operate in this way is testified to most emphatically by the statistics of exports and by the order books of many of our large concerns.

ELIMINATION OF COMPETITION.

The conditions just referred to may be classed among the natural ones. Another condition of importance, to my mind, I would call an artificial one. The elimination of competition by the organization of large manufacturing companies, which have been launched during the last year or more, will certainly have an important bearing, and is one of the changed conditions, the study of which will interest us.

NO PANIC WITHOUT A MULTITUDE.

I believe there cannot be a panic of any kind without a multitude. Certainly there is much less likelihood of a panic where a few are concerned than where there are many. A herd of cattle will stampede, each running simply because the others run. I am told that five or six cattle will not do so. A cry of fire in a crowded theatre will cause a mad rush and crush for the doors. The same cry uttered in the same building when occupied by 15 or 20 men will simply cause them to make a search for the fire.

The student of past booms of the Iron business will remember that, when prices began to wane, the fear what some of their 30 or 40 competitors might do has led nearly every one of these 30 or 40 to do the very things that would tend most to accelerate the decline of prices. If a few did undertake to stem the tide and support the market they generally found the load too heavy for them to carry.

WEAKNESS OF DISUNION.

Competitors were so numerous that harmony of action was out of the question. I am disposed to believe that this frightened feeling, which came from the weakness of disunion, had as much to do with the creation of some of the panics of the past as any so-called overproduction or underconsumption. If I am right in this the markets of to-day have a protector in the great trade organizations.

TRADE COMBINATION A PROTECTOR.

Where before hundreds of minds had to unite upon a line of policy, now ten are about all that are needed to be consulted. Heretofore, when the bottom fell out of the Iron market, the Hardware merchant with loaded shelves was left to hold the bag. He had had no part in producing the panic; he was almost powerless to prevent it. The trade combination ought to be his best friend and his most faithful and powerful protector. If a curtailment of production be advisable we can now have it in a systematic and reasonable way. Heretofore, the intentions of the manufacturer were good, but disunion made him worse than powerless.

But now a stronger hand holds the helm, and to the good intentions toward you has been added a power sufficient to avert such commercial calamities as we have known in the past.

THE MANUFACTURER'S ERROR.

It was the constant study of the manufacturer to learn how cheaply he could produce, in order that he might be in a position to sell the manufactured article at a price less than that of his neighbor. His constant aim was in effect to threaten his own life with prices which were disastrous to the very capital which he himself had invested. But to-day the conditions are different. At no point along the line of any manufacturer's market are prices exorbitant. When compared with the prices ruling in the so-called "high times" in this country, the prices for all manufacturing products to-day are ridiculously low; when compared with the wages that have followed in their wake, the earning capacity of the wage earner is enhanced rather than diminished. With such a healthy showing, the proposition to-day is quite different from that which formerly confronted the manufacturer.

POSSIBILITIES.

What shall we say of the future? With this great Government of ours directed into other lands, facing

problems of government in the far away East, in the Pearl of the Antilles and in the islands of the Pacific; with the great unsettled West and Northwest inviting the immigrant as well as the manufacturer and producer, the possibilities that are before us assure some degree of permanency.

When Mr. Sherman, that grand old man who has been and is now respected by all our citizens as one of the greatest statesmen of the age, went into the Northwest and viewed the country, and upon his return seemed dissatisfied with the policy of the Government in reaching out her arm of protection to the struggling people in the Philippines and in Cuba, he gave as his reason for his opposition to this policy of the Government that there were yet so many thousands of acres of untilled soil and of unsettled country within the domain of this union that generations yet unborn would have problems to solve without reaching out into other lands to take upon themselves the questions of government there. But when we travel through the sunny Southland and notice how within the past decade that dreary land has been transformed into a new earth, and how the hum of the wheels of industry are heard everywhere, where ten years ago naught but the sighing of the wind through the pines could be heard, we learn in what a short time wondrous transformations can take place in this country.

A ROSEATE FUTURE.

So in conclusion let me say that I see before me the Nicaragua Canal cut through the isthmus upon our South, and the ships of the Atlantic sailing through this channel up into the Pacific seas, and a great seaboard developing upon our Pacific Coast which shall outrival the seaboard of the Atlantic, and the forests and the prairies are teeming with life, the noise of the engine and of the factory wheel and the rattle of the cab wheels are heard everywhere; new cities have been built, new railroads have been constructed and new inventions have been devised and put into effect in the Northwest and the West, and the Philippine Islands and Hawaii and the Pearl of the Antilles and their people are assembling toward the close of the twentieth century in one grand convention, and I see them joining hands with the people of the East and of the North and of the South, and I hear the century bells ringing out the twentieth century and ringing in the twenty-first century, and the burden of the song that they sing is that prosperity hath been written upon our banners all the century through.

James D. Foot

of the Kearney & Foot Company, next addressed the convention. He spoke as follows:

Let us first consider the conditions as they exist and the features that surround them. The most optimistic manufacturer or jobber in the year of 1897 and 1898 did not for one moment imagine the immense advance in business that has taken place, and is now with us and likely to be for six months to come, and the consensus of business opinion to-day is that we must for six months or more experience present conditions with the following years of business activity, but not of course up to the present high pressure point. Indeed we are now at the parting of the ways, when men of sound business judgment on the one hand counsel conservative restraint, on the other hand advise free purchases at present prices, with a still further rise in the market to be expected. There are good arguments on both sides, but my time is too limited to bring them up for consideration. I must proceed to consider the

CONDITIONS THAT SURROUND US.

We find the markets still short of raw material and the finished products in about everything sold or handled by the Hardware and Metal trades. We have to a certain extent a jobbers' market, and yet the jobber cannot replace merchandise sold, except at a largely advanced cost, and the retailer in turn finds his shelves depleted by the consumer and is troubled to replace his stock for immediate sales; not the cost of same, but inability to get the goods the chief factor confronting him. Railroad construction and equipment, vast mining enterprises, large building projects, shipbuilding, and a constantly increasing export business, are the foundations and environments that now uphold and surround the manufacturer and dealer alike.

DULL TIMES BOUND TO COME.

This leads us to consider the past, and we must all admit that there are distinct periods of prosperity rising to the dizzy hight of speculation and overproduction, and then tapering off sometimes too rapidly to years of dullness and business depression. We are bound to have dull times again—let us hope that they may not come too soon.

THE GREATEST MENACE

to good business we now confront is the wholesale forming of combinations and consolidations in all lines of manufactures. Largely overcapitalized, they may in the present rush be able to pay dividends, but what are they to do when trade declines and they are left with excessive capitalization, largely reduced sales, and reduced incomes? They may reorganize and reduce capital, but many must suffer in the paring down, and indirectly general business will suffer. No consolidation has been effected except by the throwing out of many experienced men. They must find a living, and what more natural than for them to seek capital and develop opposition. They can and will find the money, and also a market for their goods. Perhaps too arbitrary methods on the part of consolidations toward the trade will make the trade free buyers of the opposition. Overproduction will follow as a natural result and after that the crash.

ON A FALSE BASIS.

This is not a pleasant argument for me to make, and I wish I could feel there was little fact in what I say. From my point of view business through trusts and combines is on a false basis—the past shows failure after failure with business conducted on these lines. Since the time that France tried to syndicate its railroads many years ago up to the present there has been but one combine of purely home growth to stand the test of time—the Standard Oil Company. That has succeeded on a business basis, and I think principally because it came into being with a new product; grew up with it, developed it in all its branches, obtained railroad concessions not granted to its competitors, and gradually forced itself into a position where competition was impossible, owing to special concessions conceded it and a complete knowledge of the product it marketed.

IMMEDIATE PROSPERITY NOTWITHSTANDING.

Years of prosperity are undoubtedly ahead of us—the development of the far East, our entrance into the markets of the continnent, the African and South American countries, all point to increased business which will help to keep our mills and factories going, but back of it all is that menace to healthy business conditions—the all absorbing trust, combine or consolidation.

CANADIAN WHOLESALE HARDWARE ASSOCIATION.

At the executive session, which opened up the proceedings of Wednesday afternoon, J. H. Newman, president of the Canadian Wholesale Hardware Association, who was present by invitation, and who spoke briefly at the morning session, made the following address, in which he spoke of the good work accomplished by his association:

I have to tender my sincere thanks for the very cordial reception you have given me, as president of the Canadian Wholesale Hardware Association.

Our association was formed on January 10 of this year. For some time past it was felt by the leading houses of Canada that some decisive steps should be

taken to bring the jobbers together for two purposes: To promote good will toward each other, and to draw closer the jobber and the manufacturer.

A great many of the manufacturers of Canada were selling direct to the retail trade, at the same time selling the jobber, the margin of profit to the latter being altogether too small.

Our constitution and by-laws are substantially the same as yours; in fact, I can safely assert that we could not in any way improve your by-laws, although we wrestled with the subject for one whole day.

I take this opportunity of tendering my sincere thanks to Mr. Fernley, your estimable secretary, for the assistance he gave us. We have now been in existence for some ten months, and have already in that short space of time accomplished much. We have secured better margins in many lines of goods, which previously were almost invariably handled without any profit. We have still much to accomplish, and we look forward with great confidence to the future, as far as the Hardware trade is concerned.

We have not so much endeavored to govern our own selling prices, but to clearly and definitely present our position to the leading manufacturers, and almost without exception have been met in a fair and equitable manner. I know that it is often a common and frequent assertion that the jobbers' day is over, but I do not for one moment believe the statement. The jobber is necessary to the manufacturer. Especially is this the case in a young country like the Dominion of Canada, where we spread over such a vast territory, stretching from the Atlantic in the East to the Pacific in the West, and where the cost of distributing goods is so expensive. Our entire population is about 5,500,000, smaller than the population of the State of New York.

One object that we have kept before us during the year is the absolute necessity of securing and maintaining a margin of profit for the jobber. This I think we are getting to understand, and receiving the hearty cooperation of the members of our association.

But I must not prolong my remarks. I came here by invitation, and intend to listen and gain what I am sure will prove valuable information to our association.

I again thank you for your kind invitation, and trust your deliberations will result in much good.

The Smoker.

A largely attended and thoroughly enjoyable smoker was held on Wednesday evening at the Monongahela House. Much credit is due for its success to John W. Hubbard and the committee of which he was chairman, who were indefatigable in their courtesies to the guests of the Pittsburgh manufacturers.

THURSDAY MORNING.

The session was devoted to the consideration of business matters, such as the reports made by the various committees. No action was taken of any special importance.

A. Asher Smith

of Sydney, Australia, indent merchant and manufacturers' representative, and representative of the Australian Hardware Association to the recent Commercial Congress in Philadelphia, was introduced to the convention and made an address which was frequently interrupted by applause, as follows:

I thank you very heartily, indeed, for the kind manner in which you have received the expression from your President. I can assure you that it is with the utmost gratification that I am able to be present at this gathering. As an ironmonger, as we call them in England and Australia, it is a pleasure for me to meet those engaged in the same business in other parts of the world, and it will be pleasant for you to learn that the goods manufactured by American manufacturers are daily becoming more and more interesting to us in Australia. It is an absolute fact, gentlemen, that we regard America, in a very large measure, as the future source of our supplies in the Hardware trade. What we do want the manufacturer to do is to regard Australia as part of his domestic trade, and treat us in the same liberal spirit in which he treats his domestic trade—that is, as I understand it.

Now, we are a very long way off, and it is more difficult for us to estimate our requirements than it is for you, gentlemen; therefore, we are at a disadvantage, compared to yourselves. At the same time, if the American manufacturer will only give to the question of shipping facilities the attention which is necessary and advisable, I am perfectly sure that the distance which separates Australia from America will be very much lessened. As I say, there is a disposition, a feeling, in Australia, entirely in favor of the American manufacturer, and it would not be difficult for the American manufacturer to extend his operations in that country.

As I have said before, gentlemen, it is very pleasant for me to have had the opportunity of addressing a few words to such a gathering as this is, and I hope that in the future in Australia we will feel more closely related to the Hardware dealers in America.

VISIT TO EDGAR THOMSON STEEL WORKS, WESTINGHOUSE ELECTRIC & MFG. COMPANY, ETC.

Thursday afternoon the members of the association and their friends, manufacturers and manufacturers' representatives, were taken by special train on the Pennsylvania Railroad to the Edgar Thomson Steel Works of the Carnegie Steel Company. They witnessed the blowing of several heats in the converting department, many seeing the process of making Bessemer Steel for the first time. Thence they were taken to the blooming mill and afterward to the rail mill. Everything was operating smoothly, and the visitors were profuse in their expressions of admiration at the manner in which the huge masses of Steel were deftly handled by mechanical appliances with few men visible.

On returning to the train refreshments were served *en route* to the works of the Westinghouse Electric & Mfg. Company, at East Pittsburgh. A hasty trip was made through these works, which are of great extent, and are in themselves a striking example of the wonderful development of the electrical business, one of the newest industries of this era of material and scientific progress.

The return trip to Pittsburgh was made by way of the west bank of the Monongahela River, for the purpose of giving the excursionists a view of the great Homestead works of the Carnegie Steel Company, as well as the widely known establishment of Jones & Laughlins and other important Iron and Steel plants in that locality.

THE CASH DISCOUNT—SHOULD IT BE ABOLISHED?

One of the most interesting features of the entire convention was the discussion of "The Cash Discount—Should it be Abolished?" to which Thursday evening was devoted. The session was open to manufacturers, who were invited to participate in the discussion. President Bishop occupied the chair, and most ably directed the proceedings, skillfully drawing forth additional contributions to the discussion and preventing the interest from flagging. Following is an abstract of the remarks made by the several speakers, and the text of the resolution adopted by the convention, which ended the discussion:

A. D. Clinch of New York: The time of this convention cannot more profitably be employed than in a thorough discussion of the subject, cash discounts. All manufacturers should be asked to incorporate in their terms of sales a cash discount of not less than 2 per cent. This condition should be readily granted by the manufacturers because it would be no burden on them, for they can em-

brace it in their estimated costs, and when their customers do not take advange of it they receive the additional profit.

To the jobbers it is of paramount importance that the manufacturers make these terms, because, as no doubt it is the experience of all, a very small proportion of our customers take advantage of the cash discounts, and consequently the cash discounts in purchasing show a very handsome profit in themselves.

But to make the profit more possible it will be necessary for the National Hardware Association to secure the co-operation of all its members.

The terms I would recommend are: On all purchases between the 1st and 15th of the month, 2 per cent. for cash if paid for not later than the 20th of the current month, and all purchases between the 15th and the end of the month, 2 per cent. for cash if paid for not later than the 10th of the succeeding month.

It is only just to the jobbers that these conditions should prevail, because, I believe, it is the experience of all that there are many customers who have to be carried along, and the cash discounts in purchasing will in part pay for the extra risks and trouble.

CHAS. W. EMERY OF INDIANAPOLIS: My idea is (and I speak personally and from what I have heard) that the manufacturers feel that a 2 per cent. cash discount in 10 days is a tax upon the business which they desire to eliminate. A 2 per cent. cash in 10 days, or net 60 days, is a discount at the rate of 15 per cent. per year. They object to giving 15 per cent. a year when they can borrow money at 6 per cent. or less to carry accounts until they mature.

I believe that a majority of jobbers look at the 2 per cent. which they have been getting for discounting their bills in 10 days after they are billed as a source of income.

If you make the terms net cash in 30 days the jobber who in the past has been discounting his bills has no advantage over his slow-paying competitor. I believe that this is another inroad into the income of the jobber which cannot be overlooked or ignored, and should not be conceded without a united protest upon our part.

FRANK L. CLARK OF PITTSBURGH: It seems to me it does not make much difference whether goods are sold on 30, 60 or 90 days; it is always figured in the cost of making goods. Where 2 per cent. discount is allowed, the 2 per cent. is always figured in the cost. In my opinion we would all fare better if everybody was on a cash basis.

R. W. SHAPLEIGH OF ST. LOUIS: I don't believe the manufacturers recognize the condition that exists with the jobbing trade in changing their terms so universally. It is a rather difficult matter to adapt ourselves to the changed conditions.

H. B. LUPTON OF PITTSBURGH: As the matter appears to me, it is a mere matter of interest. Sixty days and 2 per cent. off, 10 days, is a relic of 12 and 15 per cent. money. Allowing 2 per cent. in 10 days—that is, 2 per cent. interest—we are allowing for 50 days' use of money; that is, 14 per cent. a year. That is more of an interest, putting it flatly upon that basis, than the manufacturer feels he can pay. If he cannot get money at less than 14 per cent. he had better go out of the business.

CHAS. M. BIDDLE OF PHILADELPHIA: I think it is a good time for the National Hardware Association to take up this subject of credits. I think that we might be able to shorten the credits and possibly adopt a 30-day basis, but I think the way the manufacturers have done it is going at it in the wrong way.

I think that eventually the manufacturers that are now attempting to get 30 days will find that they will fail to get their returns in 30 days, and they will adopt some system giving an extra discount.

JOHN B. VARICK OF MANCHESTER, N. H.: I think we are rather going backward, as far as prompt payments are concerned. History repeats itself. After the Civil War everything was prosperous. They got down to a hard cash basis almost invariably. Well, as times changed a little, they did not change the price so much—they began to offer 60 and 90 days and four months. During these prosperous times we might get along very well on 30 days, but I think it will defeat itself.

L. I. GARRETT OF TAUNTON, MASS.: I know that the sentiment among the manufacturers is in favor of this change; but that has not prevented me from saying to them what I should say to you, that I don't believe that the step they have taken is very well advised or properly taken.

There ought to be some reasonably sharp line of demarcation between the man who pays his bills promptly and the man who does not. If you keep your eyes on your bad debts and figure them out you will find that the man who fails upon you is the man to whom you have extended long time.

R. A. KIRK OF ST. PAUL: This I regard as a subject of a great deal of importance. It is a policy of the manufacturers that we will have to meet for some time to come. The prominent thing for us to consider is what will we do to meet this issue?

The new terms proposed are simply lifting the price of goods one peg higher and we must keep pace with it, and as we come to sell our goods we should bear in mind that those goods have gone up.

Whether it is practicable or not in some locations for the jobbers to adopt 30 days terms or not I cannot say. It may be in certain localities this can be done. It cannot be done universally. It cannot be done in the section of country from which I come.

JAMES D. FOOT OF NEW YORK: I wish to put myself on record as indorsing to a great extent what has been said by Mr. Garrett. Where money is plentiful cash discount is not desirable, but I think at all times there should be a proper cash discount. Make that what you will, but something definite should be figured on.

W. T. GRAHAM OF CHICAGO: I have not anything to say upon this subject particularly, except to state that the regular terms in selling Tin Plate to-day are as they have been for many years—1 per cent. for cash in 10 days.

It has occurred to my mind that this cash discount is something of a trade discount. I think that that might as well be taken into consideration. I think the discount varies in the different trades. There is another thing that might appeal to me in our own business, and that is the question of credit. We would have some difficulty in settling some questions we have to settle if our terms were absolutely 30 days without any discount for shorter payment.

W. W. SUPPLEE OF PHILADELPHIA: I believe, gentlemen, that reducing the time to 30 days without any cash discount is one of the greatest hardships that could be placed on the Hardware trade.

It is impossible for the average retail trade to pay in 30 days: you are obliged to carry them.

I think we might disabuse our minds of making it practicable in the various sections of our country to bring our customers to 30 days.

Resolution.

The following resolution was adopted without a dissenting vote, notwithstanding the fact that many members privately expressed their belief that the trend of the times is toward the shortening of terms and the abolition of all discounts for cash payment:

Resolved, That it is the sense of the National Hardware Association that the discount of 2 per cent. for cash, ten days, formerly given by the manufacturers of Steel and Iron goods be not construed as bank interest, but as a premium for prompt payment and an insurance or protection of credits, and further, that such or similar discount be retained where still allowed, and that we urge its restoration where it has been discontinued.

On request of several members the president asked for a vote of the manufacturers present on the resolution adopted, and it was unanimously approved by them with one exception.

FRIDAY MORNING.

Considerable routine business came up for attention at this session, but the most important matter was the election of officers. The following were the choice of the convention for the positions respectively stated:

PRESIDENT.
John Bindley, Pittsburgh.
FIRST VICE-PRESIDENT.
R. W. Shapleigh, St. Louis.
SECOND VICE-PRESIDENT.
Brace Hayden, San Francisco.
EXECUTIVE COMMITTEE.
W. R. Belknap, Louisville, three years.
P. E. Strauss, Boston, one year.
J. D. Moore, Birmingham, Ala., one year.

The Executive Committee met shortly afterward and re-elected T. James Fernley of Philadelphia secretary-treasurer.

Presentation to Mr. Bishop.

A pleasant episode was the presentation, by W. W. Supplee, in behalf of the association, of a gavel to Mr. Bishop, the retiring president, as a memento of his services in that capacity. The gavel is of the conventional pattern, and is the one with which the first session was called to order under Mr. Bishop's official tenure. It was subsequently ornamented with a broad gold band bearing a suitable inscription.

The administration of Mr. Bishop was an eminently wise and successful one. Not only did the manner in which he discharged his arduous duties meet with the enthusiastic approval of the members, but in his conduct of the office and contact with the membership he won their warm personal regard. The demands of his own business compelled him to refuse the re-election which would have been accorded him.

Work for the Coming Year.

The principal business of the session on Friday afternoon was the discussion of special features of work which it is desirable for the officers to take up during the coming year. A number of suggestions were made, but most stress was laid on the desirability of inducing manufacturers not to insist on the shortening of terms and the withdrawal of the cash discount.

Richmond Selected.

After a spirited contest, several cities desiring the privilege of entertaining the association next year, the advocates of Richmond, Va., were successful in securing the most votes for their historic city.

Resolutions of Thanks.

Resolved, That the thanks of the National Hardware Association are due and are hereby tendered to the manufacturers of Pittsburgh, and especially to their Entertainment Committee, for the most generous hospitality bestowed upon us during our stay in this great and enterprising city of Pittsburgh. We shall carry with us for all time a most hearty appreciation of the courtesies extended.

Resolved, That the thanks of the National Hardware Association be hereby tendered to R. M. Repp of the Logan-Gregg Hardware Company of Pittsburgh for his most efficient services as railroad secretary of the convention.

Resolved, That the thanks of this association are hereby tendered to J. H. Van Newkirk of the Russell-Erwin Mfg. Company for his efficient services as general secretary of this convention.

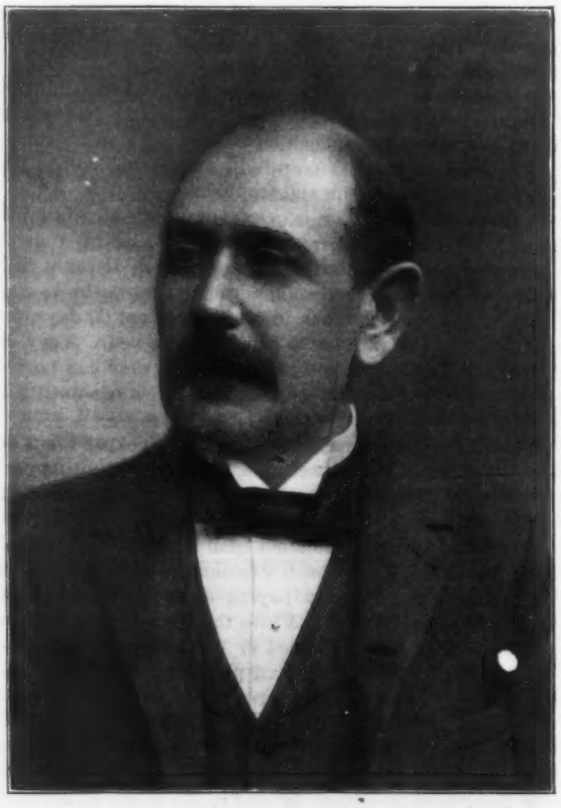
Resolved, That the thanks of this association are hereby tendered to the managers of the Monongahela House, who have so efficiently provided for our entertainment during our stay in this city.

Resolved, That the thanks of this association are hereby tendered to the jobbers of the cities of Pittsburgh and Allegheny for the beautiful badges which we are now wearing, and which we shall cherish as a token of their appreciation.

The convention then formally adjourned to meet in Richmond, Va., in 1900.

JOHN BINDLEY.

John Bindley was born in Pittsburgh, Pa., October 26, 1846. He was the son of John C. Bindley, a prominent builder in those days, and his ancestors were the genuine old English stock. He attended the schools of Pittsburgh, and entered the employ of John England, in the Hardware business, June 2, 1862. In 1868 he became associated with Mr. England as a partner, under the firm name of England & Bindley, and so continued until 1877, when he purchased Mr. England's interest and assumed the entire ownership and management of the concern, which then became the Bindley Hardware Company. The firm were incorporated under that style in 1890, since which time he has had associated with him several of his



JOHN BINDLEY,
President National Hardware Association.

assistants. The company now occupy a prominent place in the Hardware business of the country.

Mr. Bindley has accumulated large real estate interests and other means outside of the Hardware business. He is noted for his responses to appeals for charity, always bearing in mind the injunction regarding the left hand not knowing what the right hand doeth. He is a director in the Duquesne National Bank, as well as in the firm of Marland, Neely & Co., Limited (Bolt and Nut manufacturers of Pittsburgh), also of the Duquesne Club, and is actively engaged in other business enterprises. He devotes some of his time to the advancement of literature, and is a director of the Bishop Bowman Institute of Pittsburgh, a very prominent educational institution for young ladies. He is also an associate member of the Art Club of Pittsburgh, and is interested in many undertakings for the advancement of music. He is president of the Pittsburgh Chamber of Commerce.

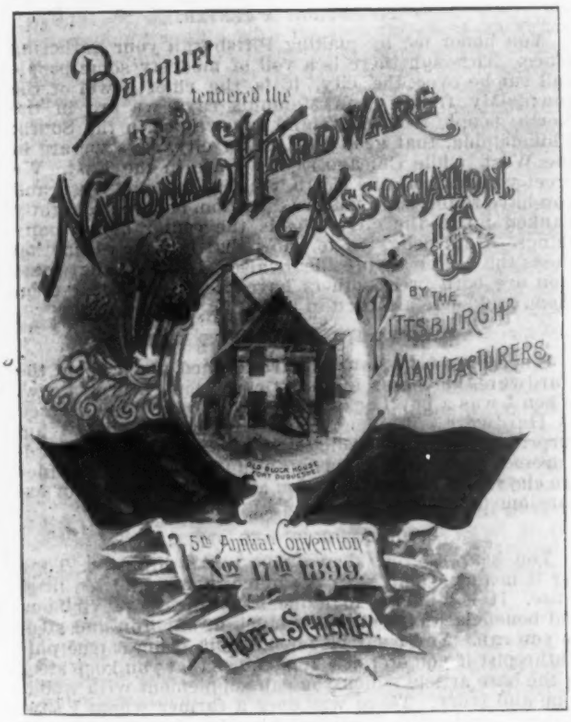
He was one of the creators and for several years president of the Western Pennsylvania Exposition Society, to which the city of Pittsburgh made a land grant of property worth over $1,000,000, and on which were erected buildings for permanent exposition purposes, by the citizens of Pittsburgh, which cost over $600,000. He is in the front rank in enterprises for the upbuilding and progress of the city, and is esteemed as one of its most influential and representative citizens.

THE BANQUET.

The three days' convention of the association was brought to a happy termination on Friday evening by a banquet tendered the members by the Pittsburgh manufacturers. It was given in the large banquet hall of the Hotel Schenley, the finest hotel in Pittsburgh. It is located about 2 miles from the heart of the city, immediately beside Carnegie Institute, Schenley Park and the Phipps Conservatory. The surroundings are delightful, and the hotel contains every modern convenience. It is specially suitable for large gatherings, but the capacity of the banquet hall was taxed to the utmost to accommodate the members of the National Hardware Association and other guests who were present to partake of the banquet.

As early as 7 o'clock the guests began to gather, and by 8 o'clock the lobby of the hotel was completely filled up, and advantage was taken of the opportunity to exchange greetings between old friends, and also to make new ones. At 8.30 the doors of the banquet hall were thrown open and the guests filed in to their respective places. Attendants held large cards, each with a letter designating the particular table, and the guests found their places without difficulty, and there was no confusion. A verse of the grand old hymn "America" was sung by the guests standing, after which they were seated and the banquet commenced. The courses were served in splendid manner, music being discoursed by an orchestra located upon a small stage at one side of the hall.

At the eastern end of the hall is a large balcony, in which were seated a number of the wives and women friends of members, who viewed the proceedings with much interest. A light lunch, with wine, was served to the ladies during the course of the banquet in the main hall.



Early in the afternoon a definite promise had been secured that Andrew Carnegie would attend the banquet at the close of the performance of the Pittsburgh Orchestra in Carnegie Hall, at which he was also present. The reception accorded Mr. Carnegie was a most enthusiastic one, and showed the high esteem in which he is held by the Pittsburgh manufacturers. Immediately upon his entrance the band struck up "Auld Lang Syne," the members standing. Mr. Carnegie was then seated between H. H. Bishop, ex-president of the National Hardware Association, and John Bindley, the new president, when the banquet proceeded, and was brought to a close about 11 p.m.

After cigars had been lighted, John W. Hubbard, master of ceremonies, called the assemblage to order, and introduced Judge Joseph Buffington of the United States District Court of Pittsburgh, who had been appointed toastmaster. Judge Buffington, in a very few happy and appropriate remarks, introduced as the first speaker of the evening H. H. Bishop, ex-president, who made the following address:

Speech of H. H. Bishop.

It is a well-known saying that "Some men are born to greatness, some achieve greatness, some have greatness thrust upon them." I might paraphrase it and say, "Some men are born to honors, some achieve honors, and some have honors thrust upon them."

I feel that I may safely say that I am one upon whom honors have been thrust this evening, and without just desert upon my part, but solely by virtue of the honor which has been conferred upon me by my friends and co-laborers of the National Hardware Association.

FRIENDLY RELATIONS.

We have been the guests of the manufacturers of Pittsburgh during our brief stay within its walls. The hospitality which is characteristic of you, our hosts, has on this occasion outdone itself, and reaches a fitting climax in the feast which we have but just concluded. Our days with you have been one round of delight, and we thank you for it. We appreciate more than the acts of hospitality the good will, the kindly feeling, the friendship that has prompted these acts. We welcome it as an evidence of friendly relations between you as manufacturers and ourselves as merchants, which our association has during the five years of its existence unceasingly labored to bring about. It encourages us to believe that even better understandings may exist between us in the future regarding our respective needs, and that we may work together, hand in hand, for the uprooting of evil, the building up of good in our business customs.

PHENOMENAL PROSPERITY.

We are nearing the close of a year of unexampled prosperity. I am told privately that perhaps no city in the country has experienced its benefits to as great an extent as your own city of Pittsburgh, and no individual citizens of Pittsburgh to the same extent as you who are directly interested in the manufacture of iron and steel. We congratulate you upon this happy condition of affairs. We rejoice with you in your prosperity, and hope that it may continue for a longer period, as now seems probable.

NEW ORDER OF THINGS.

The year just past has witnessed to an astonishing degree—some might say, to an alarming degree—an evolution in business. I refer to the amalgamation of large interests from many parts into one whole, single corporations controlling the product of many, competitive manufacturers joining hands and working as a unit. As compared with the last ten years of strife and combat this is, without question, a new order of things. Being new, it must attract the attention of all thoughtful men. Those of us who are not admitted to your inner counsels can only surmise the cause which has led to this evolution. We are charitable enough to think that it is only a pursuance of nature's first law, self preservation. We can see possibilities, however, that after this preservation of self has been safely accomplished, another characteristic of humanity may obtain the upper hand, and that is greed. We can see a possible temptation to consideration of self only and ignoring or belittling the just rights of merchants, employees and the general public. On the other hand, we can see great possibilities for good to all concerned. Capital, whether mercantile or manufacturing, can obtain good returns. Labor, whether of the brain or of the hands, may be better rewarded than ever. The general public in no way injured. But of most importance is the possibility of putting the United States of America

IN A COMMANDING POSITION

in the commercial world. We are justly proud of our country, of its brain and brawn. We point to the admitted fact that the laboring classes of America are better fed, better clothed, better housed, than those of any nation on the globe. This, too, with the conditions that have ruled in the past. We can see possible economies that will elevate this class to an even higher point, and make our claim a still more solid one.

As merchants, we appreciate most keenly the necessity that the laboring classes should have buying power. This can only be possible by

STEADY EMPLOYMENT AT REMUNERATIVE WAGES.

We therefore appeal to all organized bodies of manufacturers, to all large corporations, to so shape their policies that the just rights of labor may be fully conserved, with the belief that it will go a long way toward quieting the social unrest so much in evidence in the past, and removing from the arena of politics a question which has no place there, but which is simply one of business economy.

The history of the

NATIONAL HARDWARE ASSOCIATION,

whose members are your guests this evening, is perhaps well known to most of those present, but I cannot refrain from seizing the opportunity presented on this occasion to call attention to its aims, which by constant reiteration may be impressed upon your minds. Organized in 1894, its constitution declares that its object shall be "the promotion of more friendly business relations and mutual confidence and good will toward each other and with manufacturers."

This object has been persistently followed by its officers during the five years of its existence. The increased membership, the large attendance on the occasion of this, its fifth annual convention, cannot but bear convincing testimony that their efforts have not been entirely futile.

It is organized on broad lines, and as has been stated on numerous occasions by its former and most honorable president, advocates a "High Standard of Business Methods" for merchant and manufacturer alike. By a high standard is meant an honorable standard, an unselfish standard. It frowns upon sharp practice, deceit and all other evils that have crept into business customs. It stands for a new order of things.

A HIGH STANDARD.

Recently in conversation with an old time merchant, who is highly respected and honored by his competitors, he told me an incident of his early career, which interested me exceedingly.

It was the custom in those days for buyers to come to the market to purchase their goods. Traveling salesmen were unknown. On one occasion this gentleman met at his hotel a merchant from the interior, who had come to the city for the purchase of supplies, whom he recognized as the customer of a competing house. He entered into conversation with him, and they walked down the street together. In due course they reached the store where my informant was employed, and paused a moment to conclude the conversation in which they were engaged, and shortly separated, the interior merchant going into the store of the competitor, and the clerk entering his own place of business. Shortly afterward the proprietor spoke to him thus: "James, did not I see you with Mr. Rawlins a few moments ago in front of the store?" "Yes, sir." "I hope you did not make any effort to induce him to come in and purchase his supplies from us." "I did not, sir, for I understood your wishes." "That was right, James. Mr. Rawlins is a customer of Mr. Jones, and it would be highly dishonorable for us to make any effort to take him away from him. He would not do such a thing to us."

Fancy an occurrence of that kind in the present day. Even the National Hardware Association is not prepared to go to that extreme, so that I must amend my claim that it stands for a new order of things to read, a partial restoration of the old order of things.

AN UNBEARABLE CONDITION,

Improbable as the incident which I have just related may seem, it must be acknowledged that since then the pendulum had swung to the opposite side, and that the old time honor and chivalry of business men has been well nigh lost sight of. The mad struggle for personal gain has brought prosperity to a few, ruin to the many, until the condition has become unbearable, and must be improved.

Occasions like this are a move in the right direction. They draw closer together those who have been separated by misunderstanding, distrust and petty jealousies. They broaden the minds of all who take part in them, and must inevitably produce good results. Each generation of business men is called upon to solve new problems. Each generation should be an

IMPROVEMENT UPON ITS PREDECESSORS.

Let us, then, as merchants and manufacturers realize the responsibility that is placed upon us, and go forth from the feast so bountifully set before us, determined that our future course shall be in the line of restoring some of that old time consideration for the rights of others which has gradually dropped out of sight, that we will work together to the attainment of a high place in the commercial world, to the glorification and progress of our manufacturers, our merchants and our country.

Address of Andrew Carnegie.

At the close of Mr. Bishop's remarks, which were followed with much interest and punctuated with frequent applause, the toastmaster arose and announced that there was present one who had endeared himself in the hearts of the Pittsburgh people as no other man ever had. He closed by introducing Andrew Carnegie, who was accorded an even more enthusiastic reception than when he first came into the hall. It was fully five minutes before order could be restored so that Mr. Carnegie could be heard. In substance he spoke as follows:

The great secret of making an after dinner speech is not knowing what you are going to say. Your retiring president has just entertained you, and the fact is I don't know where I am at. I was invited here as a guest. Now I must turn around and play the host as a Pittsburgh manufacturer. I never had a greater pleasure than welcoming and gazing on such an audience of fine looking men. I recognize in you a band of multimillionaires, and you want me to tell you how to dispose of your well earned wealth. I would advise you to inclose a postage stamp and you can readily procure the pamphlet of "Gospel of Wealth."

Now, gentlemen, I don't want to play preacher here. I want to have a good time. I will be pleased if this enjoyable condition continues, for "we won't go home till morning." I am delighted to hear from your ex-president that you are sharing the present prosperity. This reminds me of a story. There was once a man traveling through the highlands of Scotland. He stopped at a public place for a drink and asked for some whisky and water. When the drink was given him, and after taking some of it, he asked whether the whisky or water was put in first. He was told that he would get to it after a while, at the bottom of the glass. I am glad prosperity is with the wholesale Hardwaremen. They no doubt have a stock on hand, and the men here are congratulating themselves that they have "seen our sales agent and that they are not sending their customers to Smith." There was a time when steel rails were $16.50 a ton and billets were $15. Now it is different. I think I am now beginning to taste at the bottom of the glass.

PITTSBURGH A CENTER.

You honor me by making Pittsburgh your gathering place. Although there is a veil of modesty some people call smoke over the city, it is the chief jewel of the town. My friend from Memphis says we are in the North; people from Cleveland say we are in the South; Philadelphia, that good old Quaker city, says we are in the West, while Chicago says we are in the East. We greet you all from the North, South, East and West, and you have found us in neither direction, but we are rightly banked up in the city. She is the center of so many things. I am delighted to know that in your estimation she is the center for presidents also. It is said that some men are born great, others have greatness thrust upon them, and some are born in Ohio.

HARDWARE A VERY BROAD TERM

Since I have sat down I have learned much about the Hardware business; in fact, more than I ever knew. When I was a boy Locks, Keys and Hinges were classed as Hardware. Much now turns on the Hinges. I am surprised at the monopolistic spirit shown by the Hardwaremen. In this age typewriters and sewing machines are classed as Hardware. You are the worst body of expansionists I ever knew.

PHILANTHROPY AND STEEL.

You hear a great deal about philanthropists. They say it means a man with too much money and too little sense. It is difficult to name a calling more virtuous and beneficial than selling as much of our iron and steel as you can. You can't be far off from being a true philanthropist if you do this. Remember that you keep steel as the base article which you can supplement with wood, bone and ivory. There was once a farmer whom I saw shaking hands with President Lincoln. The farmer said he had walked from Iowa. He said to the President: "Mr. Lincoln, I have come to shake hands with you because I trusted in you and God since the war started." The President replied: "I hope you were at least half right." As long as you continue to use steel from Pittsburgh, and not more than one-half steel, the story of President Lincoln will never have a better application.

Since you have come here you have looked at everything and honored us. You can't honor a Pittsburgher without honoring the entire city. You have elected one of our best citizens, one of our foremost business men, a man of whom we are all proud, as your next president. If you ever come here again do not forget that we will like to renew this delightful acquaintance. I thank you.

When Mr. Carnegie had concluded the assemblage arose and sung several verses of "He's a Jolly Good Fellow," when Mr. Carnegie, after shaking hands with a few particular friends, retired. Mr. Carnegie had hardly left the banquet hall when a member arose and made the motion that he be declared an hororary member of the National Hardware Association. The motion was seconded and put to the members by the new president, John Bindley, and carried by a unanimous rising vote. Mr. Carnegie has the distinction of being the first honorary member of the National Hardware Association.

Geo. T. Oliver's Address.

The toastmaster then introduced Geo. T. Oliver, formerly of the Oliver Wire Company and Oliver & Snyder Steel Company, who spoke as follows:

The middleman, otherwise known as the jobber, was one of the first products of civilization. No, Mr. Toastmaster, I did not say one of the worst products, I said "one of the first products." In his original or savage state man had no need of any intermediate agency in the transaction of business. In that happy time, when one man had what another man wanted, the two simply met and held a short discussion on the subject of ownership. At the close of this discussion there was usually only one man left, and he walked away with the property; but as the relation between man and man became more complex, and money, or its equivalent, made its appearance as a factor in the interchange of property, the necessity arose for some agency by which buyer and seller could be brought together, and gradually this intermediate agent took up the practice of buying from both parties, and in turn selling his purchases at a profit to whoever wanted them. This was the first merchant, the first man who bought to sell again, and, gentlemen of the National Hardware Association, this first merchant, clothed only in the leaves of the forest, with the shade of a widespreading tree for his warehouse, was your logical and legitimate progenitor.

THE SOURCE OF A NATION'S WEALTH AND POWER.

From that date to this the importance of a nation, outside of mere military or brute power, has always been commensurate with the importance of its mercantile or commercial class in the scale of society. It was commerce which made the Phœnicians the richest of all ancient peoples. It was the commerce of Venice which made her the ruler of the Adriatic, and brought to her watery streets in countless ships the golden wealth of the Orient. It was the wealth brought by the commerce of the Dutch Republic that turned her sand dikes into gardens, that enabled her stout burghers to resist for 80 years the mighty power of Spain, and that won for her merchant princes at once the respect and envy of the arrogant nobles of surrounding nations. England owes her marvelous advancement and present prosperity at least as much to the commercial instinct of her people as to the undaunted valor of her soldiers and sailors.

THE BUILDERS OF A NATION.

And you, gentlemen, and men like you, side by side with the farmer and the manufacturer, have done your full share to bring this country of ours to its present condition of almost unchallenged supremacy in the commercial world. In the conquest of the West you have followed close upon the steps of the pioneer, and the country store was invariably a close neighbor of the first log cabin. It was largely through the efforts of your class that the land is now settled from ocean to ocean and that the great American desert has been turned into a fertile country, covered with smiling farmsteads and populous cities.

THE DAWN OF AN EPOCH.

But more than this is needed. Heretofore you have confined your efforts largely to internal commerce. No set of merchants ever became truly great by trading Jack Knives with each other. We cannot attract wealth to our country simply by transferring money or goods from our right hand to our left. We must look abroad; we must have a great merchant marine. The fortunes of war have thrown into our hands, and brought within the sphere of our influence, lands far away from our shores, the trade of which must be brought under our influence and control. While there may be grave doubts in the minds of some earnest and thoughtful citizens as to the wisdom of acquiring this additional territory, and taking all the responsibility of this additional population, this is not the question which should now be discussed. The Government of our country has already taken that responsibility: it is a question of the past. What we shall do with them—how we shall govern them —or whether we shall govern them at all or not—are also questions which should not now be discussed. They are questions of the future. Every sentiment of patriotism, every inspiration of American manhood, demands that the consideration of all such questions be postponed until the last armed Tagal has thrown away his gun and reverently saluted the flag of our country as it waves unchallenged over the pacified islands. But whatever disposition is finally made of them, the events of the past year have bound us to these islands by bonds which can never be broken, and those bonds the future must strengthen, and not weaken. We must have unquestioned control of the trade of the islands, and our trade must spread from them to the furthest limits of Asia and the islands of the sea. We must send to them our American goods floating in American ships. Marvelous as has been our development in the century that is just closing, it will seem but small when looked back upon by our children and our children's children in the century to come.

Mr. Oliver's remarks were listened to with close attention, and his statement as to the policy which should be pursued by this country with reference to the government of the Philippine Islands evidently was in accord with the views of a great majority of his hearers, as he was accorded most hearty applause.

Fraternal Relations Between Shippers and Railroads.

The next speaker on the list was William Gibson, Pittsburgh Superintendent of the Baltimore & Ohio Railroad, who spoke as follows:

Yesterday evening when I promised Mr. Lupton to make a very short speech on the fraternal relations between shippers and railroads, it did not occur to me to ask whether he meant the normal relation or the present relation. If the present relation, I can indicate it to you by a very short illustration.

A gentleman, by the way a furnaceman, came into my office the other day and complained that if we did not furnish more cars and move his coke more promptly they would have to bank. I proceeded to relate our numerous troubles to him. He, however, refused to be comforted; explanations availed nothing, and I modestly ventured to suggest that it might not be a bad idea to try the Pennsylvania Railroad for a change. He burst into laughter and said that only the day before Mr. Pitcairn had suggested to him to go over and try the B. & O. Thus prophecy is being fulfilled, the lion and the lamb lie down together, and, of course, we are the lion.

INTERESTS OF SHIPPER AND RAILROAD MUTUAL.

While this incident serves to illustrate to a certain extent the present extraordinary volume of business which is being handled in the Pennsylvania District, I am very glad to be able to say that it in no way represents the normal relation which exists between the railroad and the shipper. We of the railroads have come to recognize that the interests of the shipper are our interests, and the railroad man who best serves his corporation is the one who most carefully studies the requirements of the shipper.

RAILROAD A PUBLIC SERVANT.

The railroad stockholder has the same right as any other investor to expect a return on his investment, but that is not all. The mission of a railroad is not fulfilled by the mere declaration of a dividend. A railroad is in the very strictest sense a public servant, and the corporation which is most likely to pay a dividend to its stockholders is the one which renders the most prompt and efficient service to the shipper and to the public generally.

Great as are the railroad facilities with which the Pittsburgh shipper is blessed, it has been alleged by profane persons that they might be improved. Of course, if any of you gentlemen wished in the worst way to go to New York, you would naturally take the Duquesne Limited over the B. & O., but the profane persons aforesaid do not allude in their remarks to the facilities which are afforded the Pittsburgh manufacturer for getting either himself or his product transported to distant points. They allude rather to what might be delicately referred to as a

LOCAL INTERCHANGE.

It has been stated, to borrow an every-day phrase from international politics, that the "open door" policy does not exist to an extent which might be made possible. In other words, the Pittsburgh manufacturer does not sell everything he produces in distant points. He also sells to his neighbors, and it is said to be sometimes a more simple matter to get a camel through the eye of a needle than it is to get a carload of freight transferred from a railroad switch on one side of town to another railroad switch on the other.

Perhaps it is right and proper that this should be so;

but, on the other hand, if it were not so, who will say that the relation between the Pittsburgh shipper and the Pittsburgh railroad would not thereby be vastly improved. It has even been suggested by a distinguished and far seeing Pittsburgher that the day is not far distant when the necessities of the situation would demand and call into existence an independent company, or some other equally effective arrangement, which would for all practical purposes make every isolated railroad switch local to every line which touches this city and district. The Pittsburgh manufacturer believes, and righteously believes, that no matter what the location of his industry, he should be on equal footing with his competitor in cities like Cleveland or Chicago, for example, where the location of an industry on any particular line is no bar to the untrammeled use of other lines.

PITTSBURGH OWES MUCH TO HER RAILROAD FACILITIES.

Still, the fact remains that while the Pittsburgh shipper may have some cause for complaint, there is a great deal which he must recognize that he owes to his railroad facilities. While Pittsburgh's natural location, and the great energy and force of her business men, have made her great, her growth would have been very much less rapid had the service rendered by the railroads been less efficient. Perhaps the one man more than any other who has contributed in the past 25 years to this service is no other than my friend, Mr. Pitcairn of the Pennsylvania Railroad. The Pittsburgh shipper in his widest development is represented here to-night by a distinguished gentleman, and the mere mention of his name in a gathering of this character is sufficient to insure a manifestation of respect and of grateful and hearty appreciation. I allude to Mr. Carnegie.

I am thankful, Mr. Toastmaster and Pittsburgh manufacturers, for having been given the opportunity of joining in your welcome to the gentlemen who are your guests.

Other Addresses.

The next speaker introduced by the toastmaster was James Francis Burke, a prominent attorney of Pittsburgh and an after dinner speaker of considerable ability. Mr. Burke spoke on "Our Progressive Country in Our Progressive Century," and his interesting address was followed with close attention and much appreciated.

Two or three short impromptu addresses were made by other members, after which the banquet came to a close. Many of the members left for their home on Frida yevening, or early on Saturday morning, but quite a number remained over to visit the large Sheet Iron mills of the W. Dewees Wood Company, at McKeesport, Pa. This concern are manufacturers of Wood's Patent Planished Iron, which has been on the market for 25 or 30 years, and with which every consumer of Sheet Iron throughout the United States is thoroughly familiar.

The dinner given by the Pittsburgh manufacturers was more largely attended and was probably more enjoyable than other similar ocasions. The Committee of Arrangements are entitled to much thanks for the admirable way in which the banquet was conducted.

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The following list of those present at the convention will be of interest as indicating the very representative character of the gathering:

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Austin & Doten, Boston: Harry L. Doten.
Baker Hardware Company, Sioux City, Iowa: A. D. Baker.
A. Baldwin & Co., New Orleans: Albert Baldwin, Jr.
Baldwin, Robbins & Co., Boston: John H. Robbins, Austin H. Decatur.
Barker-Jennings Hardware Co., Lynchburg, Va.: O. B. Barker.
Barker, Rose & Clinton Company, Elmira, N. Y.: Frederick Barker.
Beck & Gregg Hardware Company, Atlanta: W. A. Parker.
W. B. Belknap & Co., Louisville: W. R. Belknap, Wm. Heyburn.
Biddle Hardware Company, Philadelphia: Chas. M. Biddle, James H. Ritter.
Bindley Hardware Company, Pittsburgh: John Bindley, Wm. J. Mercer, W. H. Cochrane, John Reitz, Jr., E. J. Lloyd.
Bigelow & Dowse Company, Boston: Samuel H. Bigelow.
Bode Hardware Company, Cincinnati: Henry Bode.
Irving D. Booth, Elmira, N. Y.: I. D. Booth.
Bostwick-Braun Company, Toledo: George A. Braun, W. H. Standart.
Joseph Breck & Sons, Boston: Joseph F. Breck.
Brown & Wales, Boston: Wm. Q. Wales.
Buford Bros., Nashville: Edward Buford.
Burhans & Black Company, Syracuse: Jerrold W. Black.
Butts & Ordway, Boston: Frederick H. Butts.
Canton Hardware Company, Canton, Ohio: J. B. Brothers, H. L. Betts, R. L. Spotts.
Carlin & Fulton, Baltimore: Geo. L. Irvin.
Caverhill, Learmont & Co., Montreal: T. H. Newman.
Chase, Parker & Co., Boston: Allan J. Chase.
Clark, Quien & Morse, Peoria, Ill.: Charles D. Clark, F. E. Smith.
Clark, Rutka, Weaver Company, Grand Rapids: W. D. Weaver.
Congdon & Carpenter Company, Providence: Gilbert C. Carpenter, Henry C. Bangs.
R. D. Cone Company, Winona, Minn.: W. J. Landon.
Corbett, Failing & Robertson, Portland, Ore.: W. E. Robertson.
J. W. Crancer & Co., Leavenworth, Kan.: E. W. Crancer.
Dana Hardware Company, Boston: Leon C. Carter.
Dodge, Haley & Co., Boston: C. A. Haines.
W. S. Donnan & Co., Richmond: W. S. Donnan.
Drake Hardware Company, Burlington, Iowa: Chas. E. Otto.
Dunham, Carrigan & Hayden Company, San Francisco: Brace Hayden, Wm. L. Carrigan.
Edwards & Walker Company, Portland, Maine: Fred. Walker.
Emery, Waterhouse & Co., Portland, Maine: William Chamberlain.
Empkie-Shugart Company, Council Bluffs: L. C. Empkie.
J. H. Fall & Co., Nashville: J. H. Fall, Jr.
Farwell, Ozmun, Kirk & Co., St. Paul: R. A. Kirk, F. W. Hurty, F. B. Platt, F. A. Bostwick.
T. James Fernley, Philadelphia: T. James Fernley, Frank G. Drew.
Fitz, Dana & Co., Boston: Peter E. Strauss.
Fones Bros. Hardware Company, Little Rock: J. A. Fones.
Foster, Stevens & Co., Grand Rapids: Charles C. Philbrick.
Wm. Frankfurth Hardware Company, Milwaukee: L. Maschauer.
Freeman, Delamater & Co., Detroit: D. C. Delamater.
Frye, Phipps & Co., Boston: Albert M. Wiley.
Frick & Lindsay Company, Pittsburgh: W. E. Frick, George C. Bailey.
Gille Hardware & Iron Company, Kansas City: James Van Peyma.
Gotfredson Bros. Hardware Company, Green Bay, Wis.: L. Gotfredson.
Gray & Dudley Hardware Company, Nashville: R. M. Dudley.
Gummey, McFarland & Co., Philadelphia: Wm. T. Gummey.
C. W. Hackett Hardware Company, St. Paul: T. G. Walther.
Haley, Brennan & Co., Boston: Edwin L. Haley.
Arthur C. Harvey Company, Boston: Arthur C. Harvey.
F. W. Heitmann & Co., Houston: F. A. Heitmann.
Holder & Herrick, Boston: Geo. W. Herrick.
A. M. Holter Hardware Company, Helena, Mont.: D. M. Patenaude.
Honeyman, De Hart & Co., Portland, Ore.: Edward J. De Hart.
Howell, Gano & Co., Cincinnati: Jacob W. Gano.
Huber & Kalbach Company, Oskaloosa, Iowa: W. H. Kalbach.
Indianapolis Hardware Company, Indianapolis: P. M. Hildebrand.
King Hardware Company, Atlanta: George E. King.
Knapp & Spencer Company, Sioux City, Iowa: Charles E. Hughson.
F. Kroner Hardware Company, La Crosse, Wis.: John C. Kroner.
Kruse & Bahlmann Hardware Company, Cincinnati: O. P. Schriver, Hermann Bahlmann.
Lautner Hardware Company, Allegheny: H. E. Lautner, L. M. Heyl, Joseph Lautner.
Lee-Glass-Andreesen Hardware Company, Omaha: W. M. Glass, H. J. Lee.
Lee Richardson Company, Vicksburg: Lee Richardson.
Chas. C. Lewis Company, Springfield, Mass.: Chas. C. Lewis.
J. C. Lindsay Hardware Company, Pittsburgh: A. J. Bihler, Thomas McMurray, John S. Lindsay, Charles Reisinger.
H. G. Lipscomb & Co., Nashville: Brown Buford.
Lockwood-Taylor Hardware Company, Cleveland: Charles B. Lockwood, John C. Henry.

Logan-Gregg Hardware Company, Pittsburgh: W. H. Parke, Jacob Lang, Geo. B. Logan, Robert M. Repp, P. L. Logan.
H. W. Luetkemeyer & Sons, Cleveland: E. H. Luetkemeyer.
C. M. McClung & Co., Knoxville: Bruce Keener.
McClure & Co., Pittsburgh: T. G. Williams.
McIntosh-Huntington Company, Cleveland: H. H. Bishop, Geo. T. McIntosh, J. E. Williams.
Samuel McKnight, Pittsburgh: Allegheny, Pa.
Marshall-Wells Hardware Company, Duluth: H. C. Marshall.
Mathews & Boucher, Rochester: J. H. Boucher.
May & Thomas Hardware Company, Birmingham, Ala.: Charles E. Thomas.
F. P. May & Co., Washington: F. P. May.
Merchant & Co., Philadelphia: Powell Evans.
C. S. Mersick & Co., New Haven: R. S. Woodruff.
Charles Millar & Sons, Utica: Henry W. Millar.
Moore & Handley Hardware Company, Birmingham, Ala.: James D. Moore.
Morehouse & Wells Company, Decatur, Ill.: C. M. Hurst.
Morley Brothers, Saginaw: Edward W. Morley, Ralph W. Morley.
Newlin, Knight & Co., Philadelphia: Henry Knight.
Ott Brothers & Co., Wheeling; W. P. Heiskell.
Paddock-Hawley Iron Company, St. Louis: Gaius Paddock.
Palmer Hardware Company, Savannah: Armin B. Palmer.
Pogue, Miller & Co., Richmond, Ind.: George Miller, Jonas Gaar.
John Pritzlaff Hardware Company, Milwaukee: John C. Koch.
Rector & Wilhelmy Company, Omaha: P. C. DeVol, W. S. Wright.
Richards & Conover Hardware Company, Kansas City: Walter B. Richards, John F. Richards.
Richards & Co., Boston: H. W. Waite.
Riter Bros. & Co., Philadelphia: Chas. J. Riter.
Chas. F. Schmidt, Burlington: Chas. F. Schmidt.
Schreiber, Conchar & Westphal Company, Dubuque: Charles D. Scott.
E. P. Sanderson Company, Boston: E. P. Sanderson.
Seattle Hardware Company, Seattle: F. W. Baker, A. S. Burwell.
J. D. Seeberger, Des Moines: J. D. Seeberger.
Seltzer-Klahr Hardware Company, Philadelphia: S. Spencer Scott.
A. F. Shapleigh Hardware Company, St. Louis: Richard W. Shapleigh.
Shields & Bro., Philadelphia: Paul A. Griffith, John R. Griffith.
Sickels, Preston & Nutting Company, Davenport: James R. Nutting, Grant H. Nutting.
Smith Bros. Hardware Company, Columbus: O. L. Davis.
Standart Brothers, Detroit: Joseph G. Standart.
Stauffer, Eshleman & Co., New Orleans: Gen. B. F. Eshleman.
Stollberg & Clapp Co., Toledo: John Stollberg.
Supplee Hardware Company, Philadelphia: William W. Supplee, Jas. S. Bonbright, William D. Supplee.
Teague, Barnett & Co., Montgomery: G. W. Barnett.
Tenk Hardware Company, Quincy: Rudolph Tenk.
W. A. L. Thompson Hardware Company, Topeka: J. G. Bauer.
C. Trautman Company, Pittsburgh: Herbert P. Malick.
A. Tredway & Sons Hardware Company, Dubuque: A. W. Tredway.
Underhill, Clinch & Co., New York: Alfred D. Clinch.
Van Camp Hardware & Iron Company, Indianapolis: Cortland Van Camp, R. P. Van Camp, Charles W. Emery, S. G. Van Camp.
James M. Vance & Co., Philadelphia: Wm. C. Peters.
Jno. B. Varick Company, Manchester, N. H.: Jno. B. Varick.
Isaac Walker Hardware Company, Peoria: J. T. Neilson.
J. M. Warren & Co., Troy: Fred. A. Leeds.
Watkins-Cottrell Company, Richmond: E. T. Robertson.
Weaver, Palmer & Richmond, Rochester: G. D. Palmer, S. J. Weaver.
H. W. Webb & Sons, Baltimore: D. R. Webb.
Weed & Co., Buffalo: Hobart Weed, W. J. Dunham, James R. Smith, Edgar C. Neal.
J. D. Weed & Co., Savannah: W. D. Krenson.
Wiebusch & Hilger, New York: Walter M. Taussig, E. T. Smythe.
Wolff, Lane & Co., Pittsburgh: Thomas H. Lane, Horace G. Darsie, G. M. T. Taylor, George A. Watson, John D. Cherry.
Woodruff Hardware Company, Knoxville: W. W. Woodruff, Jr.
George Worthington Company, Cleveland: W. D. Taylor, H. H. Rudd, C. A. Jewett.
Wright, Dana & Co., Utica: Benjamin H. Wright, Geo. S. Dana.

Manufacturers.

American Axe & Tool Company, New York: Charles H. Wier, A. G. Twigg, Frank E. Corey.
American Cutlery Company, Chicago: M. Hirsch, B. S. Loeb.
American Steel & Wire Company, Chicago: Stephen W. Tener, Henry B. Lupton, W. H. Foege, Wallace H. Rowe, Robert McMillan, F. H. Forman, Robert D. Carver.
American Steel Hoop Company, Pittsburgh: Frank L. Clark, H. G. Racey, J. W. Brainard, Morris Bachman, George E. Painter, H. W. Nutt, Frank Illenberger, W A. Kingsley, H. B. Guthrie, Charles A. Painter.
American Tin Plate Company, Chicago: W. T. Graham, Jno. C. Oliver, Howard M. Davis, Frank Dickerson, W. C. Cronemeyer.
American Window Glass Company, Pittsburgh: W. E. Parker, E. J. Lewis.
American Wringer Company, New York: G. H. Jantz, James Richens.
Anchor Nail & Tack Works, Pittsburgh: O. H. Bateman.
Anderson, Dupuy & Co., Pittsburgh: Edward A. Yerkes.
Atha Tool Company, Newark: Edward Ingalls.
E. C. Atkins & Co., Indianapolis: N. A. Gladding, Julian W. Perkins.
Atlas Tack Company, Taunton, Mass.: J. P. Dabney, C. H. Paul, Geo. F. Howard, G. G. Roberts, Jr.
Baker Chain & Wagon Iron Mfg. Company, Allegheny: J. T. Davis.
Baker Forge Company, Ellwood City, Pa.: J. H. Baker.
G. & H. Barnett Company, Philadelphia: Tom Almgill, J. M. Hottel.
Bellaire Stamping Company, Harvey, Ill.: W. H. Pipp.
Braeburn Steel Company, Pittsburgh: Geo. B. Morrow.
Brittan & Mathes Company, Pittsburgh: Philip Mathes, George M. Lovelock, Arthur Brittan.
Budke Mfg. Company, Pittsburgh: H. H. Niemann, L. A. Meyran, A. G. Geilfuss.
A. M. Byers & Co., Pittsburgh: A. M. Byers, Jr.
Caldwell Mfg. Company, Rochester: Allen Boucher.
W. A. Campbell, Chicago, Ill.
Carnegie Steel Company, Limited, Pittsburgh: Andrew Carnegie, H. A. Finnerty, H. E. Tener, Jr., W. B. Dickson, Homer J. Lindsay, Frank C. Neale.
Champion Steel Range Company, Cleveland: C. H. Miller.
Chartiers Iron & Steel Company, Pittsburgh: James Lippincott.
Clendenin Brothers, Baltimore: George H. Harper.
Cleveland Stone Company, Cleveland: H. W. Caldwell.
Corbin Cabinet Lock Company, New Britain: Geo. W. Corbin.
P. & F. Corbin, New Britain: Chas. H. Parsons, W. E. Bartholomew, Frederick Fee, J. E. Dean.
Crescent Steel Company, Pittsburgh: George Leas.
Detroit Wire & Iron Works, Detroit: T. L. Smith.
Dilworth, Porter & Co., Pittsburgh: E. L. Maxwell.
Henry Disston & Sons, Philadelphia: Samuel Disston, Harry C. Disston.
John Dunlap Company, Pittsburgh: John H. Dunlap.
Fox Machine Company, Grand Rapids: Geo. W. Leary.
H. C. Frick Coke Company, Pittsburgh: Charles W. Freeman.
Garland Chain Company, Rankin Station, Pa.: Robert Garland, Charles Garland.
Geuder & Paeschke Mfg. Company, Milwaukee: T. A. Musgrove.
Hubbard & Co., Pittsburgh: John W. Hubbard, S. A. Rankin.
Hussey, Binns & Co., Pittsburgh: Ralph H. Binns, George V. Willson, Joseph H. Martin.
Iowa Farming Tool Company, Fort Madison, Iowa: F. S. Kretsinger.
Iron City Tool Works, Pittsburgh: Wm. H. Hays, George F. Smith, J. F. Baker.
Jones & Laughlins, Limited, Pittsburgh: C. C. Briggs, Roland Gerry, W. C. Moreland, Jr., Robert Geddis, W. L. King.
Kearney & Foot Company, New York: James D. Foot, W. S. Tragle.
Kelly Axe Mfg. Company, Alexandria, Ind.: James P. Kelly, George T. Price.
Kirkpatrick & Co., Pittsburgh: W. C. Dickey.
Klein, Logan & Co., Pittsburgh: W. C. Klein.
La Belle Steel Company, Pittsburgh: Severn P. Ker, I. Walter Jenks.
Lake Erie Iron Company, Cleveland: F. W. Davis.
Lamson & Sessions Company, Cleveland: George M. North.
Lansing Wheelbarrow Company, Lansing, Mich.: D. J. Mahoney.

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Buford Bros., Nashville: Edward Buford.
Burhans & Black Company, Syracuse: Jerrold W. Black.
Butts & Ordway, Boston: Frederick H. Butts.
Canton Hardware Company, Canton, Ohio: J. B. Brothers, H. L. Betts, R. L. Spotts.
Carlin & Fulton, Baltimore: Geo. L. Irvin.
Caverhill, Learmont & Co., Montreal: T. H. Newman.
Chase, Parker & Co., Boston: Allan J. Chase.
Clark, Quien & Morse, Peoria, Ill.: Charles D. Clark, F. E. Smith.
Clark, Rutka, Weaver Company, Grand Rapids: W. D. Weaver.
Congdon & Carpenter Company, Providence: Gilbert C. Carpenter, Henry C. Bangs.
R. D. Cone Company, Winona, Minn.: W. J. Landon.
Corbett, Failing & Robertson, Portland, Ore.: W. E. Robertson.
J. W. Crancer & Co., Leavenworth, Kan.: E. W. Crancer.
Dana Hardware Company, Boston: Leon C. Carter.
Dodge, Haley & Co., Boston: C. A. Haines.
W. S. Donnan & Co., Richmond: W. S. Donnan.
Drake Hardware Company, Burlington, Iowa: Chas. E. Otto.
Dunham, Carrigan & Hayden Company, San Francisco: Brace Hayden, Wm. L. Carrigan.
Edwards & Walker Company, Portland, Maine: Fred. Walker.
Emery, Waterhouse & Co., Portland, Maine: William Chamberlain.
Empkie-Shugart Company, Council Bluffs: L. C. Empkie.
J. H. Fall & Co., Nashville: J. H. Fall, Jr.
Farwell, Ozmun, Kirk & Co., St. Paul: R. A. Kirk, F. W. Hurty, F. B. Platt, F. A. Bostwick.
T. James Fernley, Philadelphia: T. James Fernley, Frank G. Drew.
Fitz, Dana & Co., Boston: Peter E. Strauss.
Fones Bros. Hardware Company, Little Rock: J. A. Fones.
Foster, Stevens & Co., Grand Rapids: Charles C. Philbrick.
Wm. Frankfurth Hardware Company, Milwaukee: L. Maschauer.
Freeman, Delamater & Co., Detroit: D. C. Delamater.
Frye, Phipps & Co., Boston: Albert M. Wiley.
Frick & Lindsay Company, Pittsburgh: W. E. Frick, George C. Bailey.
Gille Hardware & Iron Company, Kansas City: James Van Peyma.
Gotfredson Bros. Hardware Company, Green Bay, Wis.: L. Gotfredson.
Gray & Dudley Hardware Company, Nashville: R. M. Dudley.
Gummey, McFarland & Co., Philadelphia: Wm. T. Gummey.
C. W. Hackett Hardware Company, St. Paul: T. G. Walther.
Haley, Brennan & Co., Boston: Edwin L. Haley.
Arthur C. Harvey Company, Boston: Arthur C. Harvey.
F. W. Heitmann & Co., Houston: F. A. Heitmann.
Holder & Herrick, Boston: Geo. W. Herrick.
A. M. Holter Hardware Company, Helena, Mont.: D. M. Patenaude.
Honeyman, De Hart & Co., Portland, Ore.: Edward J. De Hart.
Howell, Gano & Co., Cincinnati: Jacob W. Gano.
Huber & Kalbach Company, Oskaloosa, Iowa: W. H. Kalbach.
Indianapolis Hardware Company, Indianapolis: P. M. Hildebrand.
King Hardware Company, Atlanta: George E. King.
Knapp & Spencer Company, Sioux City, Iowa: Charles E. Hughson.
F. Kroner Hardware Company, La Crosse, Wis.: John C. Kroner.
Kruse & Bahlmann Hardware Company, Cincinnati: O. P. Schriver, Hermann Bahlmann.
Lautner Hardware Company, Allegheny: H. E. Lautner, L. M. Heyl, Joseph Lautner.
Lee-Glass-Andreesen Hardware Company, Omaha: W. M. Glass, H. J. Lee.
Lee Richardson Company, Vicksburg: Lee Richardson.
Chas. C. Lewis Company, Springfield, Mass.: Chas. C. Lewis.
J. C. Lindsay Hardware Company, Pittsburgh: A. J. Bihler, Thomas McMurray, John S. Lindsay, Charles Reisinger.
H. G. Lipscomb & Co., Nashville: Brown Buford.
Lockwood-Taylor Hardware Company, Cleveland: Charles B. Lockwood, John C. Henry.

Logan-Gregg Hardware Company, Pittsburgh: W. H. Parke, Jacob Lang, Geo. B. Logan, Robert M. Repp, P. L. Logan.
H. W. Luetkemeyer & Sons, Cleveland: E. H. Luetkemeyer.
C. M. McClung & Co., Knoxville: Bruce Keener.
McClure & Co., Pittsburgh: T. G. Williams.
McIntosh-Huntington Company, Cleveland: H. H. Bishop, Geo. T. McIntosh, J. E. Williams.
Samuel McKnight, Pittsburgh: Allegheny, Pa.
Marshall-Wells Hardware Company, Duluth: H. C. Marshall.
Mathews & Boucher, Rochester: J. H. Boucher.
May & Thomas Hardware Company, Birmingham, Ala.: Charles E. Thomas.
F. P. May & Co., Washington: F. P. May.
Merchant & Co., Philadelphia: Powell Evans.
C. S. Mersick & Co., New Haven: R. S. Woodruff.
Charles Millar & Sons, Utica: Henry W. Millar.
Moore & Handley Hardware Company, Birmingham, Ala.: James D. Moore.
Morehouse & Wells Company, Decatur, Ill.: C. M. Hurst.
Morley Brothers, Saginaw: Edward W. Morley, Ralph W. Morley.
Newlin, Knight & Co., Philadelphia: Henry Knight.
Ott Brothers & Co., Wheeling: W. P. Heiskell.
Paddock-Hawley Iron Company, St. Louis: Gaius Paddock.
Palmer Hardware Company, Savannah: Armin B. Palmer.
Pogue, Miller & Co., Richmond, Ind.: George Miller, Jonas Gaar.
John Pritzlaff Hardware Company, Milwaukee: John C. Koch.
Rector & Wilhelmy Company, Omaha: P. C. DeVol, W. S. Wright.
Richards & Conover Hardware Company, Kansas City: Walter B. Richards, John F. Richards.
Richards & Co., Boston: H. W. Waite.
Riter Bros. & Co., Philadelphia: Chas. J. Riter.
Chas. F. Schmidt, Burlington: Chas. F. Schmidt.
Schreiber, Conchar & Westphal Company, Dubuque: Charles D. Scott.
E. P. Sanderson Company, Boston: E. P. Sanderson.
Seattle Hardware Company, Seattle: F. W. Baker, A. S. Burwell.
J. D. Seeberger, Des Moines: J. D. Seeberger.
Seltzer-Klahr Hardware Company, Philadelphia: S. Spencer Scott.
A. F. Shapleigh Hardware Company, St. Louis: Richard W. Shapleigh.
Shields & Bro., Philadelphia: Paul A. Griffith, John R. Griffith.
Sickels, Preston & Nutting Company, Davenport: James R. Nutting, Grant H. Nutting.
Smith Bros. Hardware Company, Columbus: O. L. Davis.
Standart Brothers, Detroit: Joseph G. Standart.
Stauffer, Eshleman & Co., New Orleans: Gen. B. F. Eshleman.
Stollberg & Clapp Co., Toledo: John Stollberg.
Supplee Hardware Company, Philadelphia: William W. Supplee, Jas. S. Bonbright, William D. Supplee.
Teague, Barnett & Co., Montgomery: G. W. Barnett.
Tenk Hardware Company, Quincy: Rudolph Tenk.
W. A. L. Thompson Hardware Company, Topeka: J. G. Bauer.
C. Trautman Company, Pittsburgh: Herbert P. Malick.
A. Tredway & Sons Hardware Company, Dubuque: A. W. Tredway.
Underhill, Clinch & Co., New York: Alfred D. Clinch.
Van Camp Hardware & Iron Company, Indianapolis: Cortland Van Camp, R. P. Van Camp, Charles W. Emery, S. G. Van Camp.
James M. Vance & Co., Philadelphia: Wm. C. Peters.
Jno. B. Varick Company, Manchester, N. H.: Jno. B. Varick.
Isaac Walker Hardware Company, Peoria: J. T. Neilson.
J. M. Warren & Co., Troy: Fred. A. Leeds.
Watkins-Cottrell Company, Richmond: E. T. Robertson.
Weaver, Palmer & Richmond, Rochester: G. D. Palmer, S. J. Weaver.
H. W. Webb & Sons, Baltimore: D. R. Webb.
Weed & Co., Buffalo: Hobart Weed, W. J. Dunham, James R. Smith, Edgar C. Neal.
J. D. Weed & Co., Savannah: W. D. Krenson.
Wiebusch & Hilger, New York: Walter M. Taussig, E. T. Smythe.
Wolff, Lane & Co., Pittsburgh: Thomas H. Lane, Horace G. Darsie, G. M. T. Taylor, George A. Watson, John D. Cherry.
Woodruff Hardware Company, Knoxville: W. W. Woodruff, Jr.
George Worthington Company, Cleveland: W. D. Taylor, H. H. Rudd, C. A. Jewett.
Wright, Dana & Co., Utica: Benjamin H. Wright, Geo. S. Dana.

Manufacturers.

American Axe & Tool Company, New York: Charles H. Wier, A. G. Twigg, Frank E. Corey.
American Cutlery Company, Chicago: M. Hirsch, B. S. Loeb.
American Steel & Wire Company, Chicago: Stephen W. Tener, Henry B. Lupton, W. H. Foege, Wallace H. Rowe, Robert McMillan, F. H. Forman, Robert D. Carver.
American Steel Hoop Company, Pittsburgh: Frank L. Clark, H. G. Racey, J. W. Brainard, Morris Bachman, George E. Painter, H. W. Nutt, Frank Illenberger, W A. Kingsley, H. B. Guthrie, Charles A. Painter.
American Tin Plate Company, Chicago: W. T. Graham, Jno. C. Oliver, Howard M. Davis, Frank Dickerson, W. C. Cronemeyer.
American Window Glass Company, Pittsburgh: W. E. Parker, E. J. Lewis.
American Wringer Company, New York: G. H. Jantz, James Richens.
Anchor Nail & Tack Works, Pittsburgh: O. H. Bateman.
Anderson, Dupuy & Co., Pittsburgh: Edward A. Yerkes.
Atha Tool Company, Newark: Edward Ingalls.
E. C. Atkins & Co., Indianapolis: N. A. Gladding, Julian W. Perkins.
Atlas Tack Company, Taunton, Mass.: J. P. Dabney, C. H. Paul, Geo. F. Howard, G. G. Roberts, Jr.
Baker Chain & Wagon Iron Mfg. Company, Allegheny: J. T. Davis.
Baker Forge Company, Ellwood City, Pa.: J. H. Baker.
G. & H. Barnett Company, Philadelphia: Tom Almgill, J. M. Hottel.
Bellaire Stamping Company, Harvey, Ill.: W. H. Pipp.
Braeburn Steel Company, Pittsburgh: Geo. B. Morrow.
Brittan & Mathes Company, Pittsburgh: Philip Mathes, George M. Lovelock, Arthur Brittan.
Budke Mfg. Company, Pittsburgh: H. H. Niemann, L. A. Meyran, A. G. Geilfuss.
A. M. Byers & Co., Pittsburgh: A. M. Byers, Jr.
Caldwell Mfg. Company, Rochester: Allen Boucher.
W. A. Campbell, Chicago, Ill.
Carnegie Steel Company, Limited, Pittsburgh: Andrew Carnegie, H. A. Finnerty, H. E. Tener, Jr., W. B. Dickson, Homer J. Lindsay, Frank C. Neale.
Champion Steel Range Company, Cleveland: C. H. Miller.
Chartiers Iron & Steel Company, Pittsburgh: James Lippincott.
Clendenin Brothers, Baltimore: George H. Harper.
Cleveland Stone Company, Cleveland: H. W. Caldwell.
Corbin Cabinet Lock Company, New Britain: Geo. W. Corbin.
P. & F. Corbin, New Britain: Chas. H. Parsons, W. E. Bartholomew, Frederick Fee, J. E. Dean.
Crescent Steel Company, Pittsburgh: George Leas.
Detroit Wire & Iron Works, Detroit: T. L. Smith.
Dilworth, Porter & Co., Pittsburgh: E. L. Maxwell.
Henry Disston & Sons, Philadelphia: Samuel Disston, Harry C. Disston.
John Dunlap Company, Pittsburgh: John H. Dunlap.
Fox Machine Company, Grand Rapids: Geo. W. Leary.
H. C. Frick Coke Company, Pittsburgh: Charles W. Freeman.
Garland Chain Company, Rankin Station, Pa.: Robert Garland, Charles Garland.
Geuder & Paeschke Mfg. Company, Milwaukee: T. A. Musgrove.
Hubbard & Co., Pittsburgh: John W. Hubbard, S. A. Rankin.
Hussey, Binns & Co., Pittsburgh: Ralph H. Binns, George V. Willson, Joseph H. Martin.
Iowa Farming Tool Company, Fort Madison, Iowa: F. S. Kretsinger.
Iron City Tool Works, Pittsburgh: Wm. H. Hays, George F. Smith, J. F. Baker.
Jones & Laughlins, Limited, Pittsburgh: C. C. Briggs, Roland Gerry, W. C. Moreland, Jr., Robert Geddis, W. L. King.
Kearney & Foot Company, New York: James D. Foot, W. S. Tragle.
Kelly Axe Mfg. Company, Alexandria, Ind.: James P. Keily, George T. Price.
Kirkpatrick & Co., Pittsburgh: W. C. Dickey.
Klein, Logan & Co., Pittsburgh: W. C. Klein.
La Belle Steel Company, Pittsburgh: Severn P. Ker, I. Walter Jenks.
Lake Erie Iron Company, Cleveland: F. W. Davis.
Lamson & Sessions Company, Cleveland: George M. North.
Lansing Wheelbarrow Company, Lansing, Mich.: D. J. Mahoney.

Lovell Mfg. Company, Erie, Pa.: A. W. Walker, Chas. S. Meacham.
James McKay & Co., Pittsburgh: R. J. McKay.
McKinney Mfg. Company, Pittsburgh: Wm. S. McKinney, W. C. Farr, L. E. Hanson, J. P. McKinney, C. M. King.
Midland Steel Company, Muncie, Ind.: Jas. L. Sharkey.
Monarch Stove & Mfg. Company, Mansfield, Ohio: Emmet C. Baxter.
Monarch Stove Company, Pittsburgh: R. C. Edmonts.
G. M. Murray, Pittsburgh.
H. M. Myers Company, Beaver Falls, Pa.: Chas. W. Hubbard, Charles H. Myers, Charles S. Hubbard.
National Lead & Oil Company, New York: H. M. Preston, E. P. Day.
National Sewing Machine Company, Belvidere, Ill.: H. W. Darling.
National Stamping & Enameling Company, Milwaukee: A. L. Johnson.
National Tube Company, New York: George S. Garritt, A. S. Matheson, A. M. Lally, F. J. Hearne.
Nicholson File Company, Providence: Edmund D. Fisk.
Oliver Iron & Steel Company, Pittsburgh: James B. Oliver, John C. Smith, W. C. McMahon, Thos. J. Jones.
Oliver-Snyder Steel Company, Pittsburgh: George T. Oliver.
Old Dominion Iron & Nail Works, Richmond: Arthur B. Clarke.
Oneida Community, Limited, Niagara Falls: P. B. Noyes, E. D. Smith.
J. M. & L. A. Osborn, Columbus, Ohio: C. C. Moore.
Park Steel Company, Pittsburgh: John A. Sutton, Oden H. Wharton, Frank M. Campbell.
Charles Parker Company, Meriden: W. H. Lyon, Frederick Pease.
Peck, Stow & Wilcox Company, New York: W. R. Walkley.
Pennsylvania Drop Forging Company, Pittsburgh: J. Stuart Brown, Robert H. Hill.
Phillips, Nimick & Co., Pittsburg; B. F. Jennings, W. C. Johnston.
Pittsburgh Forge & Iron Company, Pittsburgh: F. E. Richardson.
Pittsburgh Reduction Company, Pittsburgh: Alvah K. Lawrie, Arthur V. Davis.
Pittsburgh Screw & Bolt Company, Pittsburgh: Thomas W. Smith.
Pittsburgh Steel Hoop Company, Pittsburgh: W. C. Reitz, C. E. Beeson, Edwin Bindley.
Fayette R. Plumb, Incorporated, Philadelphia: Fayette R. Plumb, W. R. Howell.
Reading Hardware Company, Reading: J. E. Harbster, M. Harbster, G. N. Jacobi, F. L. Stellwagon, W. M. Bennett, Orton Hill.
Reynolds Wire Company, Dixon, Ill.: H. G. Reynolds.
T. Rowland's Sons, Philadelphia: Howard Rowland.
Russell & Erwin Mfg. Company, New York: Geo. J. Laighton, E. H. Mansfield, B. A. Hawley, Thos. J. Usher, Theo. D. Peck, J. H. Newkirk.
J. C. Russell Shovel Company, Pittsburgh: Eugene H. King, J. L. Cooper.
Safety-Armorite Conduit Company: Charles A. Glaser.
St. Louis Shovel Company, St. Louis: J. C. Birge, S. S. Gould.
Sargent & Co., New York: Thomas J. Atkins, Lewis Sargent.
S. Severance, Pittsburgh: S. Severance, Jr., F. W. Severance.
Shoenberger Steel Company, Pittsburgh: W. L. Hirsch, W. H. Griffiths.
Silver Lake Company, Boston: E. M. Gunn.
Sidney, Shepard & Co., Buffalo: Chas. W. Wells.
Smith & Hemenway Company, New York: Landon P. Smith.
Spang, Chalfant & Co., Pittsburgh: C. H. Spang, C. C. Chalfant, C. C. Henderson.
Alexander Speer & Sons, Pittsburgh: Joseph T. Speer, W. N. Ogden.
Standard Horse Nail Company, New Brighton, Pa.: F. S. Merrick.
Standard Mfg. Company, Pittsburgh: C. F. Arrott, O. F. Grant.
Stanley Rule & Level Company, New Britain: H. S. Walter.
Stanley Works, New Britain: Geo. P. Hart, L. H. Pease, D. B. Woodbury.
Stowell Mfg. & Foundry Company, Milwaukee: A. W. Wagner.
Townley Metal Company, Kansas City: H. P. Townley.
Tyler Tube & Iron Company, Washington, Pa.: T. P. Mills, T. G. Williams.
Van Wagoner & Williams Hardware Company, Cleveland: C. S. Van Wagoner, L. F. Blue, J. J. Teeple, A. A. Fonda, C. T. Stork.
Virginia Iron, Coal & Coke Company, Bristol, Tenn.: F. P. Wright.
Wabash Screen Door Company, Rhinelander, Wis.: E. M. Kemp.
Warwood Tool Company, Wheeling: John A. Moore.
Anthony Wayne Mfg. Company, Fort Wayne, Ind.: A. C. F. Wickman.
Wellsville Plate & Sheet Iron Company, Pittsburgh: P. F. Smith, H. D. Nicholson, Chas. O. Hadley, D. S. Brookman.
Winchester Repeating Arms Company, New Haven: Irby Bennett.
W. Dewees Wood Company, McKeesport: Chas. L. Gilpin, Frederick C. Shays, Richard G. Wood, F. C. Milliken.
Wyeth Hardware & Mfg. Company, St. Joseph, Mo.: J. A. Warner.
Zug & Co., Limited, Pittsburgh: Charles G. Zug, Alex. Paterson, Chas. H. Reid.

Others Present.

W. C. Heimbucher, manufacturers' agent, Chicago.
W. W. Crandall, manufacturers' agent, Nashville.
Alfred C. Greening, R. K. Carter & Co., Pittsburgh.
Thomas F. Keating, New York City.
W. W. Near, Montreal.
C. E. Pope & Co., iron and steel brokers, Pittsburgh.
John T. Roundtree, manufacturers' agent, Denver.
T. J. Oliver, Oliver Bros., New York.
W. A. Campbell, Chicago.
G. M. Murray, Pittsburgh.
Henry Hopkins, *Hardware*, New York.
Daniel Stern, *American Artisan*, Chicago.
Richard R. Williams, Geo. W. Cope, Robert A. Walker, H. H. Roberts, *The Iron Age*, New York.

ON THE OUTSIDE OF THE CONVENTION.

Enjoyable river excursions were tendered to quite a number of those in attendance upon the convention by C. A. Painter, general sales agent of the American Steel Hoop Company. Mr. Painter owns the steam launch "Winona," which is one of the fastest boats of its kind, having a speed of 29 miles an hour. On Thursday morning Mr. Painter took out a party consisting of the ladies who had accompanied members of the convention, and also invited enough gentlemen to take up the capacity of the launch. On Friday another large party was taken out for a similar trip. The excursionists greatly enjoyed the view which they were thus afforded of the Pittsburgh water front, with its extensive river commerce.

Quite a rivalry was shown by advocates of different cities for the privilege of entertaining the next annual convention. No less than four places aspired to this honor—namely, Richmond, Cleveland, Philadelphia and Old Point Comfort. The claims of these various places were set forth with much eloquence by their different advocates, but when the convention came to voting the real contest was between Richmond and Cleveland. The convention having never met in the South, that consideration doubtless influenced a great many to vote in favor of Richmond who probably had no special reason otherwise to select that point. The desirability of meeting in some Southern city is conceded, and unquestionably the convention will meet with a warm reception when they move "On to Richmond" next year. Our Southern citizens are noted for their hospitality, and the people of Richmond may be relied upon to make their visitors long remember their sojourn in that city in 1900.

The Reading Hardware Company of Reading, Pa., distinguished themselves by the profuse distribution of high-class souvenirs. They not only presented everybody in attendance with a beautiful inkstand, but also distributed fine specimens of metal work paper weights in the form of lizards, horseshoes, bats with extended wings, &c. These various articles were the company's own products and not only showed artistic work in casting, but are also samples of the fine finish which the company give their goods. They further decorated everybody with a celluloid badge bearing their name and keystone.

E. C. Atkins & Co., Indianapolis, Ind., distributed extremely handsome calendars for 1900. These calendars

consist of separate leaves, on which the fashions from 1800 to the present time were shown. The calendars are of large size, and are of such artistic character that the recipients generally doubtless took them home.

The American Cutlery Company of Chicago made themselves remembered by the distribution of a most beautifully finished letter opener. This article is a specimen of the company's own work, having a highly polished silver plated blade, while the handle is made of heavy pearl on which the company's name is neatly engraved. The whole article is a superb specimen of workmanship, very greatly superior to what is usually presented as a letter opener.

The Nicholson File Company of Providence, R. I., distributed as their souvenir a nail file inclosed in a neat sterling silver case. It formed a very acceptable article for the vest pocket.

The McKinney Mfg. Company of Allegheny, Pa., presented all in attendance a most useful combined diary and memorandum book for 1900, substantially bound in leather. This book is of the kind which almost invariably proves an inseparable companion for a year of the person securing one.

The Lamson & Sessions Company of Cleveland, Ohio, presented a useful article in the form of a nickel plated bicycle wrench of their regular Buckeye pattern.

The Van Wagoner & Williams Company of Cleveland, Ohio, distributed as their souvenir a handsomely finished miniature anvil.

Another souvenir distributed was a very pretty white metal match box, presented by the Follansbee Bros. Company of Pittsburgh.

From a Buyer's Point of View.

Article III.

BESIDES those commercial tourists who are known as "antagonizers," there are several other classes that are not exactly received with open arms when they call upon me. Understand, I do not claim the fault or defect is all on the side of the salesman. The buyer has his days when very little upsets him. He may have been disturbed in his night's rest by a crying baby or something equally upsetting, and when he comes down to his office with a sort of a boiled owl feeling he is not in a condition of mind to be cheerful and agreeable to each and every visitor who may be seeking an interview.

Certain Salesmen Have a Depressing Effect.

There are several representatives of manufacturers who invariably have a depressing influence over me. Especially is this so when I am not feeling chipper and well. On the other hand there are those who have the reverse effect, and kind of brace me up, even though I am not in first-rate order. There is one salesman who calls on the Western jobbers regularly three or four times a year who never seems out of humor. He is one of the comparatively few traveling salesmen who find real pleasure in their wandering occupation.

The Bright Side of Things.

There seems to be no gloom in his make up, and I believe he would be cheerful under almost any conditions. Mark Tapley wouldn't be in it with the salesman I am speaking of. His sense of humor is so keen that he sees fun where many of us would find only seriousness. A few days ago I came down to the store somewhat later than usual, having been to a whist tournament the night before. I do not know what was in the punch that was passed around that evening, but I do know that had it been such a "punch" as might have been administered by a heavy weight pugilist it could not have greater staying qualities so far as my own individual head was concerned. I entered our store feeling unfit for business and thoroughly disgusted with myself for having indulged in a concoction whereof I knew nothing except that it tasted good at the time.

The Effect of a Hearty Laugh.

The first sound that reached me was a most infectious laugh, which came from our sunny friend of whom I have been speaking. He was seated on the "mourners' bench" all by himself, and, still laughing, came up to me and gave me a good grip. "Where does the laugh come in?" I asked, my head already feeling less like a boiled owl's. "Oh, it's only about Dewey. I've just been reading in this newspaper the account of his coming to New York with his best girl and going shopping. The thought came over me, Admiral Dewey going from store to store shopping, matching ribbons, or trying to, &c., and yet some of his friends declared he could never endure the fatigue and excitement of a Presidential campaign!" Then my humorous friend told a short story that I believe he made up then and there, and which would have made a cynic laugh, and my "punched" head was forgotten until after my friend had transacted his business and departed. He is the only person who has ever made me think there might be something in the Christian Science cure!

The Dark Side Saleman.

In most telling contrast to the character I have touched upon is a certain salesman's temperament who comes West as the representative of a New England manufacturer. So far as I know there has been nothing in the experience of this man to bring out that lost-all-my-friends expression that seems to have taken permanent possession of his physiognomy, except that he appears to have little power of enjoyment for anything, be it the theater, music, reading or aught else. Even a good fat order does not bring an expression of satisfaction to his solemn face. He is always a gentleman and never intrusive. He is always thoroughy familiar with the line he represents, even to the smallest detail of manufacture, and his goods are desirable to handle; but the man himself always depresses me, and I give a sigh of relief after he has said good-by and departed. In fact, after one of his depressive visits I have sometimes stepped around the corner, although it is one of the unwritten rules of our firm that we are not to indulge during business hours.

The Study of Human Nature.

I think nearly every one of us, without, perhaps, always realizing it, takes pleasure in the study of human nature. Probably the salesman and the buyer have greater opportunity for cultivating this knowledge of the inner self of other men than those who belong to other professions. I find myself drawn toward certain salesmen, sometimes even before I am well acquainted with them. There is something about them which, while it would not induce me to purchase articles which I am better off without, makes it a real pleasure to give them business. All things being equal, these salesmen will have a decided preference over others who may have similar goods that are as desirable both in quality and price. As I become better and better acquainted with these men, toward whom I was drawn almost from the first, I find that the more I study their characters the more I find them to be worthy of every confidence and respect. There are representatives of manufacturers who have been regularly coming around for nearly 30 years who never, as far as my own experience goes, make a statement which is not strictly true.

The trade have been officially notified that J. F. Wollensak, manufacturer and jobber of Hardware Specialties, Canal and Washington streets, Chicago, discontinued business on the 18th inst. Mr. Wollensak had been identified with the Western Hardware trade for many years.

Hints on Pushing Trade.

BY B. H.

THE necessity for pushing trade always exists. When the retailer leisurely lets things take their course he will some day find his trade gone. There must be energy, determination and brains put into a business to make it go, and this must originate with the proprietor.

REASONS FOR PUSHING TRADE are everywhere apparent. The dealer now has hustling competitors in the same line in the same town, and if he does not keep pace in a measure he is "not in it."

The retailer must push his trade or his up to date competitor will push him aside.

ADVERTISING.—The best method of pushing trade is by advertising. The literature on this subject is helpful, and any live retailer can improve his methods and obtain new ideas by consulting some of the books or papers devoted to this subject.

CUTS.—Advertising is largely improved by the use of cuts.

ATTRACTIVE SIGNS.—If the store contains more than one floor let every story have a sign. Also have signs running up and down at each side of the store, and placed at an angle so that persons passing in either direction can read "Hardware" or "Tinware," "Pocket Cutlery," or "Silver Plated Goods," &c.

THE STORE FRONT should be painted at least two striking colors, entirely different from other store fronts in the immediate vicinity. This will cause the building to be seen and known a block or two away.

THE USE OF THE SIDEWALK for displaying goods is important. The Hardware dealer should vary his sidewalk display as much as possible. During the fall months he can show, one day Coal Hods, then Ash Sifters, Ash Barrels, Galvanized Buckets, Fire Shovels, Axes, Shovels, &c. He need not want for variety, but he must use judgment and only display seasonable articles. It would be ridiculous to encumber the walk in November with Churns and display Sleds in April.

MARKING PRICES.—Goods shown upon the street are forced upon the notice of people who otherwise might never see them. If they are marked in plain figures sales will often be made where otherwise there would be none.

WINDOW DISPLAY.—Of its importance all are agreed. The more taste and originality put into a window show the better. Something out of the ordinary; something which will draw a crowd.

SOME CLERK IN THE STORE is often better at arranging a window than the proprietor himself. If a clerk develops ability for this work he should be encouraged and aided by suggestions. A live hen with a brood of young chickens makes an attractive window and may be made the occasion for drawing attention to Poultry Supplies. Any living animal captured from the woods and shown in the window will always be a magnet to draw attention to Ammunition and Sporting Goods. The aim should be to have something unique and different from displays of other merchants.

Originality in window display as well as in advertising is sure to attract.

PERSONAL SOLICITATION.—If he is adding a new line, why not take these goods and show them to people not his customers? Suppose he has secured the exclusive selling right for his town of a new household article. Is it beneath his dignity to introduce it to families which never deal at his store? A friendly call when the working of the Scale can be explained, and a descriptive circular with price left, may influence sales. Besides the advantage derived from the sales, the merchant will advertise his business, and if he is a good salesman will leave a good impression.

WHAT IS WANTED is to get people into the store and the inside arrangement should be such that people will see useful and necessary articles. Price tickets should be liberally used. People like to know the prices of articles, but as they may not wish to purchase then they do not care to ask many questions. If they can read the price they will make a mental note of it and when ready to buy will call.

THE INTERIOR DISPLAY of goods on the counters, floor and shelves and in showcases is worthy of effort and care. The aim should be to arrange the goods artistically, so that whether people wish to buy or not they will stop and look.

SELLING A STAPLE ARTICLE at cost, or nearly so, is a method used by some to effect sales and draw people to the store. The custom is generally condemned as contrary to true business principles by some, while others claim it is legitimate to use money to advertise in this way.

Miscellaneous Notes.

Griffin Pressed Steel Shelf Bracket.

The Griffin Mfg. Company, Allegheny, Pa., are now offering their new pressed steel shelf bracket, illustrated in *The Iron Age* of October 19, in nickel, brass, bronze and old copper finishes, as well as japanned, and announce that prices and discounts have been made uniform with those of other manufacturers of wrought steel shelf brackets. The goods are being sold direct to the trade by themselves and by the McKinney Mfg. Company, Allegheny, Pa., for whom John H. Graham & Co. are agents, 113 Chambers street, New York.

Jewel Spring Hinges.

The Chantrell Tool Company, Reading, Pa., for whom J. H. Graham & Co., 113 Chambers street, New York, are direct representatives, are putting on the market a line of Jewel spring hinges in both single and double action, some sizes of which are now ready. The hinges are of cast iron with covered springs.

Pearl Agate Ware.

The Lalance & Grosjean Mfg. Company, 19 and 21 Cliff street, New York, advise us that they are about to add to their extensive line of enameled utensils and will shortly be ready to place on the market a handsome line of mounted goods in pearl agate ware, including tea and coffee pots and biggins.

Drake's Adjustable Acetylene Gas Burner.

Drake Acetylene Apparatus Company, 37 Hathaway street, Cleveland, Ohio, are manufacturing Drake's adjustable burner for acetylene gas as here shown. The burner can be turned down to any size flame from 50 to 1 candle power by means of the interior valves, one of which may be closed entirely and the the other one reduced to a flame as small as desired for a night light,

Drake's Adjustable Acetylene Gas Burner.

without, it is stated, smoking, carbonizing or producing a sluggish flame. The diverging stems are so arranged that they can be turned into alignment in an instant. The points of the little valves may be forced up through the small hole where the gas is liberated from the rear, removing any obstruction without being obliged to extinguish the entire flame. The air mixer is in the brass and so arranged that an abundance of air may be drawn into the flame to give it the greatest force and illuminating power for the amount of gas consumed. Each burner is tested with gas and adjusted to ½ foot size before being packed. The burner is designed to overcome some of the objections to acetylene gas as an illuminant, experience as manufacturers of acetylene gas generators convincing the company that the principal difficulty is in not being able to reduce the size of the flame without smoking, thus clogging the gas apertures, which formerly it was difficult to clear.

Leather Handle Screw Driver.

Buffalo Specialty Mfg. Company, 1445 Niagara street, Buffalo, N. Y., manufacturers of high grade specialties, are making a bicycle screw driver, which is also suitable for typewriters, electrical work, light machinery, sewing machines, &c. The illustration herewith shows the tool full size. The blade is said to be of the best steel and highly finished. The handle is made of sole leather wound in a spiral so as to cover almost the entire blade, thus giving the user a good purchase in grasping the handle. It is designed as a handy tool for light work.

Solid Leather Handle Screw Driver, Full Size.

Simonds Saw Tools.

The cuts herewith shown relate to saw tools put on the market by Simonds Mfg. Company, Fitchburg, Mass. The saw tool illustrated in Fig. 1 is referred to as insuring a quick, accurate and rigid adjustment of the raker gauge. With this the depth of a raker tooth can be varied from 1-16 to 1-1000 inch, the slide, it is explained, being held firmly in all positions. The manufacturers claim that there is no chance to dislocate the slide when once set in position, a feature peculiar to this tool; also that it permits holding the jointing file square with the body of the saw. Fig. 2 shows a hammer and a setting slot combined in one tool. It is pointed out that the manner in which the hammer is poised—the way the weight is distributed—is best adapted to the work in question. The advantages claimed for the hammer are that the wide jaws of the setting slot prevent injury to the tooth, that the hammer is perfectly balanced as regards the body, and that it is easy to handle.

Fig. 1.—Crescent Saw Tool.

Fig. 2.—Swaging Hammer.

The Columbia Automatic Acetylene Gas Lamp.

The Hine-Watt Mfg. Company, 14 North Canal street, Chicago, have brought out a new acetylene gas lamp, named the Columbia Automatic, which is herewith illustrated. In this case the term "automatic" means more than a mere catch word for advertising purposes. The company have also improved their Simplex lamp by a device which affords positive adjustment of the flame size, at the same time securing an absolutely automatic water feed regulating the gas generation in accordance with the consumption at the burner. The water feed is through a vertical valve, which is opened fully when the lamp is lighted. The gas production is not regulated by the water valve, this being merely a means for shutting the water off entirely. The burner is furnished with a simple valve, with which the flame can be regulated to suit, and as soon as this latter valve has been turned so as to lower the flame the gas pressure behind the burner causes the water to drip slower in proportion. Conversely, when the flame is enlarged by the burner valve the gas pressure is lessened and the water drips faster. The generation of gas is thus always in proportion to the amount consumed, and no attention need be paid to the water valve. The burner is straight and easily removable, though it does not require cleaning as often as does the ordinary burner, its interior shape being such that the entrance of dirt is retarded. We are advised that experiments have demonstrated that the lamp can be extinguished and relighted time after time with the same charge of carbide, and as the flame is regulated at will the consumption of carbide is thus very economical. The company claim that the lamp will burn from four to eight hours, but actual test has shown that with a moderate size flame it will burn for a much longer time. One lamp lighted and set to burn a ¼-inch flame burned for nearly 20 hours. The lighting is immediate after the opening of the water valve and there is no smoking at the burner, as the proper amount of air is mixed with the gas before ignition.

In appearance the new lamp somewhat resembles the Simplex, though the water reservoir has been enlarged into a rounded cup, which tops the main body of the lamp and gives it a less severe appearance than that of the former pattern. The combustion chamber, whose reflector is of the true parabolic type, is secured to the body in rigid fashion and is proof against melting solder, as there is no solder on any of its parts. The glass front is hinged and is fitted with a latch which is not liable to get out of order, and operates easily and effectively. A few small changes have been made in the carbide cup, the advantages derived from which will be readily appreciated by gas lamp users who have experienced trouble on account of the carbide cup overflowing after part of the charge had been slacked. The cup is of two parts, one telescoping within the other. The spring above the cup does not enter either part and allows the pair, should the slackening of the carbide cause expansion, to telescope outward on each other to a limit of over ¼ inch. The user of the lamp thus does not have to be cautioned against filling the cup too full of carbide. He can put as much carbide in it as it will hold. The cup itself will take care of the expansion. Instead of using the usual flat or round wool wick to aid in the distribution of the water, the maker of this lamp has adopted a double linen diaphragm which, as practice has shown, quickly distributes the drops of water to all parts of the charge. The bottom plate which holds the carbide cup in place is screw threaded to the lamp body. Its bottom is a separate disk of thin metal lying in a flange around

Columbia Automatic Acetylene Gas Lamp.

the lower edge of the threaded ring. Over this is a washer of rubber to afford a tight joint at the bottom of the lamp. No matter how hard the threaded ring is tightened it will unscrew readily, it is explained, as when tightening it, as the rubber washer binds against the lower edge of the lamp body the flat disk turns within the ring. Thus wedging or binding is entirely avoided. The hight of the entire lamp is 5¼ inches and its weight 18 ounces. Each lamp is carefully tested before leaving the factory.

Queen and Pearl Freezers.

The Sam'l C. Tatum Company, Cincinnati, Ohio, whose New York office is in charge of Tower & Lyon, 95 Chambers street, New York, are offering two new lines

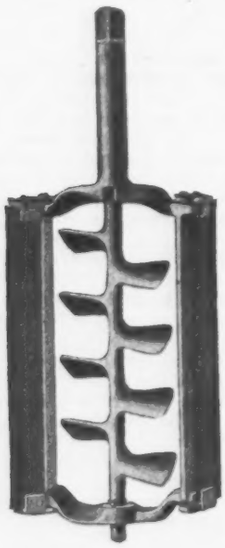

Fig. 1.—Self Centering Duplex Dasher of Queen Freezer.

of freezers, the Queen and Pearl, as here illustrated. The Queen has a triple motion, embracing, it is said, some novel and valuable features, the can being driven directly by the gearing without the complicating use of interme-

Fig. 2.—Showing Hinged Cross Piece or Hood.

diate parts. Fig. 1 illustrates the duplex dasher and is designed to explain this part of the mechanism. The can top of cast iron is geared directly to the pinion on the crank shaft, while the upper gear in the cross piece or hood, the dasher frame by means of the square on the upper end, is driven in reverse direction, so that the wood scrapers on each side of the dasher frame very rapidly scrape the inside of the can. The fingers or beaters are mounted on a central shaft having a square formed at the lower end which fits into the square socket of the cast iron can bottom. Thus the central part or beaters of the

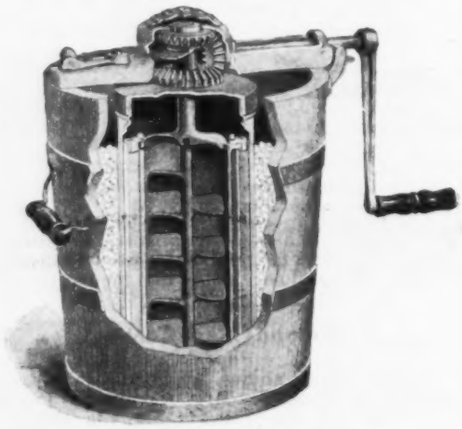

Fig. 3.—Sectional View of Queen Freezer, with Crank.

duplex dasher are whipping the unfrozen cream in the center in one direction and throwing it against the sides of the can, while the wood scrapers as rapidly scrape the frozen material from the sides of the cylinder and throw it toward the center. This alternate whipping and beating, we are advised, make it possible to freeze a mixture in the Queen freezer in one and one half minutes and in three minutes to produce a thoroughly frozen cream. With this freezer the cream is said to be ready to serve, if necessary, as soon as frozen and needs no priming or ripening process. Another improvement is the facility with which the parts can be assembled. Fig. 2 shows the convenient hinging of the cross piece or hood, the hood being an open one so the parts can be removed easily if necessary. When dropping the cross piece it is unfail-

Fig 4.—Pearl Freezer, with Crank.

ingly guided into position by the peculiar shape of the shield or guide around the center. The locking device seen in Fig. 3 is simple, holding the hood or cross piece rigidly in position. The shaft, as also the pin or rivet for the wood handle, is shouldered, so that an accurate fit is obtained, which insures the free turning of the handle. Fig. 4 illustrates the Pearl freezer, which has a single motion and is sold at a less price than the Queen. The can revolves while the dasher is stationary, but several of the features of the Queen are embodied in it and the same care as to details is given. The castings of both Queen and Pearl freezers are numbered, so there is neither difficulty nor doubt in ordering repairs, a feature which will be appreciated by dealers. Castings liable to break are of malleable iron. The manufacturers call attention to an ice bag and mallet for expeditiously preparing the cracked ice, which will be sent when ordered at a small advance. Fly wheels varying in size according to the capacity of the can will be sent instead of cranks if so instructed. Queen freezers are made in 11 sizes, from 1 to 25 quarts capacity, and the Pearl in 12 sizes, from 2 to 10 quarts.

Current Hardware Prices.

REVISED NOVEMBER 21, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Cut Prices.—*In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₱ doz. $3.00....33⅓&33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₱ lb 7¼@7¾c
Hay-Budden, Wrought.....9c@9¼c
Horseshoe brand, Wrought.....9¼c@9¾c
Samson.....₱ lb 7½@8c
Trenton, Wrought.....₱ lb 8¼@8¾c

Imported—

Armitage's Mouse Hole.....8¾c@9¼c
Peter Wright's.....9½c@9¾c

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Double Spur.60&10&10@..%
Boring Machine Augers.....
60&10&10@ ...%
Car Bits, 12-in. twist.....
60&10@....%
Jennings' Pattern:
Auger Bits.....60@....%
Ford's Auger and Car Bits..
40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.
40@40&10%
No. 30, R. Jennings' List..50&10@60%
Russell Jennings'.....35&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hang rs' Bits.....5%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List .....60&10&10@70&5%

Expansive Bits—

Clark's small, $18; large, $26.....
50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
Steer's No. 1, $26; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—

Common Double Cut..gro. $3.75@3.25
German Pattern.....gro. $5.00@5.50
Double Cut, makers' lists.....
50&5@50&10%

Hollow Augers—

Bonney's Adjustable, ₱ doz.....$16.50
Douglass'.....33⅓&33⅓&10%

Ship Augers and Bits—

Ford's.....40&10@40&10&10%
Snell's.....40%
L'Hommedieu's.....15&10@15&10&10%
Watrous'.....40@40&5%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands.$6.00@6.25
First Quality, other brands$5.50@5.75
Jobbers' Special Brands:
Good Quality.....$5.25@5.50
Best Quality.....$6.00@6.50
Cheap, Handled Axes....$4.75@5.00
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

	Iron.	Steel.	
Concord, loose collar	6	6	2% cash 10 days.
Concord, solid collar	6¼c	6½c	
No. 1 Common	5	5½c	
No. 1¼ Com. New Style	5½c	5¾c	
No. 2. Solid Collar	5¾c	5½c	
Nos. 7, 8, 11 to 14			.50&10%
Nos. 7, 8, 11 to 14, 100 sets			.60%
Nos. 15 to 18			.50%
Nos. 19 to 22			.60&10%

Boxes, Axle—

Common and Concord, not turned..
lb. 5c
Common and Concord, turned..lb. 6c
Half Patent.....lb. 9c

Balances—

Sash—

Caldwell low list.....25%
Pullman's.....62½%

Spring—

Spring Balances .....50@50&5%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 49 lb., per lb...
5¼@5½c

Beams, Scale—

Scale Beams, List Jan. 12, '82.....
30@50&5%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover.₱ gro. $6.50
No. 10 Cast Handle Dover..₱ gro. $8.00
No. 10 Steel Handle Dover.₱ gro $8 00
No. 15 Extra Heavy Steel Handle, ₱ gro. $15.00
Rival, ₱ gro.....$10.00
Taplin Mfg. Co.:
₱ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size, tinned.....$9.50
No. 150 Large Family size.....$10.00
No. 152 Large Family size, tinned.....$17.00
Lyon's, Standard size.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ gro. $7.50

Bellows—

Blacksmith—

Standard List.....70@70&5%

Net Prices.

Inch..	30	32	34	36	38	40
Each	$4.25	4.50	5.25	5.75	6.50	7.75
Extra Length:						
Each	$4.75	5.25	5.75	6.50	7.50	8.75

Molders—

Inch..	9	10	11	12	14	16
Doz...	$6.75	7.25	8.50	9.50	12.00	14.50

Hand—

Inch...	6	7	8	9	10	12
Doz....	$3.75	4.25	4.50	5.00	5.75	6.75

Bells—Cow—

Ordinary goods.....75&10%
High grade.....70@70&10%
Jersey.....70@75&10%
Texas Star.....50&10%

Door—

Gong, Yankee.....55%
Home, R. & E. Mfg. Co.'s.....50&10%
Lever and Pull, Sargent's.....33⅓&10%

Hand—

Hand Bells, Polished.....65@65&10%
White Metal.....65@65&10%
Nickel Plated.....50@50&10%
Swiss.....60@60&10%

Miscellaneous—

Farm Bells.....lb. 2@2½c
Steel Alloy Church and School.....
50&10@60%
Wilmot & Hobbs Mfg. Co, Gongs.....70%

Belting

Rubber—

Common Standard.....70&10@75%
Standard.....60&10@70%
Extra.....60@60&10%
High Grade.....60@60&10%

Leather—

Extra Heavy, Short Lap .....50&10%
Regular Short Lap .....60@60&5%
Standard .....60&10@60&10&5%
Light Standard.....70%

Cotton—

Rossendale-Reddaway B. & H Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Ill. Iron & Bolt Co.....40@40&5%
Stoddard's Lightning Tire Upsetters...40@50%

Bicycle Goods—

Lane's Cycle Hanger.....33⅓&5%
John S. Long's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden .....70&10@75&5%
Eddy's Steel.....60&10%
Hartz Steel.....50&10%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand..50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50%
See also *Machines, Hoisting.*

Boards, Stove—

1899 List:
Zinc.....50%
Crystal and Embossed.....40%

Bolts—

Carriage, Machine, &c.—

Common, list Jan. 30, '95..45&5@50&10%
Norway Iron, $3.00, list Oct. 7, '84..
75@75&10%
Phila. Eagle, $3.00 list.....
75&10@75&10&5%
Bolt Ends, list Jan. 30, '95.....
45&5&10@50&10%
Machine, list Oct. 1, '99..5.....
50&5@50&10&5%

NOTE.—*Jobbers' prices on Bolts are now generally lower than manufacturers'.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	3	4	5	6	8
Per doz...	$0.33	.36	.45	.57	.80

Cast Iron Spring Foot:

Inch	6	8	10
Per doz.....	$1.00	1.25	1.75

Cast Iron Chain, Flat, Japanned:

Inch.....	6	8	10
Per doz	$0.85	1.20	1.50

Cast Iron Shutter, Brass Knobs:

Inch.....	6	8	10
Per doz ...	$0.60	.90	1.15

Wrought Barrel Brass Knob:

Inch.....	3	4	5	6	8
Per doz	$0.44	.50	.61	.70	1.25

Wrought Barrel .....70&10@75%
Wrought Barrel, Bronzed.50@50&10%
Wrought Flush, B. K.....50&20@70%
Wrought Shutter.....60@60&10&5%
Wrought Square Neck.60&10&10@70%
Wrought Sunk.....60@60&10%
Ives' Patent Door.....62½@62½&10%

Stove and Plow—

Plow .....50&10@60%
Stove, list August 27, 1898..62½@....%

Tire—

Common, list Feb. 28, '83,...60@60&10%
American Screw Company:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Bay State, list Feb. 28, '83.....60%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Eclipse, list Feb. 28, '83.....60%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....60%
Keystone Phila., list Oct. '84.....75%
Norway Phila., list Oct. '84.....70%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz..	$3.50	4.50	5.00	6.50
Inch	2¼	2½		
Per Doz....	$7.50	10.00		

Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.

Boring Machines—*See Machines, Boring.*

Boxes, Mitre—

Seavey's, per doz., $24.00.....25%

Braces—

NOTE.—*Most Braces are sold at net prices.*

Common Ball, American..$1.10@1.20
Barber's.....10&10&10@60&10%
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....
50&10@60%

Brackets—

Cast Iron, plain.....60&10@70&10%
Wrought Steel.....70&5@70&10%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....70@70&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₱ gro. $22.00@$24.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96...25&5@33⅓&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad..45&10@50&10&5%
Fast Joint, Narrow.....
45&10@50&10&10%
Loose Joint.....60&10&5@70&10%
Loose Pin.....60&10&5@70&10%
Mayer's Hinges.....60&10&5@70&10%
Parliament Butts..60&10&5@70&10%

Wrought Steel—

Loose Joint, Table and Back Flaps, Narrow and Broad, Inside Blind, Loose Pin.....70&5@ 70& 10%
Loose Pin, Ball and Steeple Tip....
80@80&5%
Bronzed Wrt. Nar. and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 900 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Burke's, One Prong, Blunt.....5¢
Burke's, One Prong, Sharp.....5½¢
Burke's Two Prong, Blunt.....5½¢
Burke's Two Prong, Sharp.....6¢
Burke's Blunt Heel.....5½¢
Burke's Sharp Heel .....6¢

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern:	5	8	10 gal.
		$3.60	$4.00..83⅓%
Illinois Pattern.	$2 40	3.10	3.50..33⅓%
Iowa Pattern...	2.40	3.35	3.75..33⅓%
	20	30	40 qts.
New York Patt'rn	3.00	4.35	4.80..33⅓%
Baltimore Pattern	3.10	4.45	4.70..33⅓%

Cans, Oil—

Galvanized Blue Band, 1-gal., ₱ doz. $1.75@$2.00
S. S. & Co., Galvanized Family with faucet, 3-gal., ₱ gro. $54, 5-gal. $63; 10-gal., $120.00
Glass Oil.....₱ doz. $1.90@$2.20

Caps—Percussion—

Eley's E. B.....50c
G. D .....per M 32@34c
F. L .....per M 37@40c
G. E .....per M 47@50c
Musket .....per M 57@60c

Primers—

Berdan Primers, $1.00 ..... 5%
B. L. Caps (Sturtevant Shells) $1.00 ..... 5%
All other primers ..... *$1.10@$1.12*

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Com., Ball Swgd. *$1.90*
B. B Caps, Round Ball ... *$1.12@1.18*
Blank Cartridges:
32 C. F., $5 50 ..... 10c&5%
38 C. F., $7 00 ..... 10c&5%
22 cal. Rim, $1.50 ..... 10c&5%
32 cal. Rim, $2.75 ..... 10&5%
Central Fire 25%
Pistol and Rifle ..... 15c&5%
Primed Shells and Bullets ..... 15c&5%
Rim Fire Sporting 50%
Rim Fire, Military ..... 15&5%

Casters—

Bed ..... 60c&10%
Plat ..... 60c&10%
Plate, part Brass ... 50c&10%
Philadelphia ..... 60c&10%
} *Extra 10% often given.*

Martin's Patent (Phœnix) ..... 50@10%
Payson's Anti-friction Furniture. 70&10%
Payson's Anti-Friction Truck ... 70&10%
Standard Ball Bearing 45%
Tucker's Patent, low list 45%

Cattle Leaders—

See *Leaders, Cattle.*

Chain—

American Coil, Full Casks:

3-16	¼	5-16	⅜	7-16	½	9-16
8.75	6.85	5.85	5.00	4.85	4.75	4.65
⅝	¾	⅞	1 inch.			
4.50	4.40	4.40	4.40 cents per lb.			

Less than Cask lots add ¼@½c per lb.
German Coil, list July 24, '97 .....
60c&10@60c&10c&10%
German Halter Chain, list July 24, '97 ..... *60c&10@60c&10c&10%*
Trace, Wagon and Fancy Chains. list April, '98 ..... *50c&10@50c&10c&5%*
Jack Chain, list July 10, '93:
Iron ..... *60c&5@60%*
Brass ..... *60c&5@60%*
Gal. Pump Chain ..... *lb. 5@5¾c*
Breast, Hitching and Rein Chains.
Covert Sad. Works 50%
Covert Mfg. Co.:
Breast ..... 35&2½
Halter ..... 35&2½
Heel ..... 35&2½
Rein ..... 35&2½
Stallion ..... 35&2½
Oneida Community:
Eureka Coil and Halter ..... 60@60&5%
Niagara Coil and Halter ..... 60@60&5%
Niagara Cow Ties ..... 45&5@45&10&5%
Am. Coil and Halters ..... 50&10&5@60%
Am Cow Ties ..... 35&5@40&5%
Wire Goods Co.:
Dog Chain 60%
Universal Dbl-Jointed Chain 45%

Chalk—(From Jobbers.)

Carpenters', Blue ..... *gro. 50@52c*
Carpenters', Red ..... *gro. 40@42c*
Carpenters', White ..... *gro. 36@38c*
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's ..... 40&10%
Columbia ..... 50&10%
Eclipse ..... 60@60&10%

Chisels—

Socket Framing and Firmer

Standard List ..... *70c&10@75c&10%*
Buck Bros 30%
Charles Buck 30%
Swan's ..... 75@75&5&2½%
L. & I. J. White ..... 30@30&5%

Tanged—

Tanged Firmers ..... *40c&10@50%*
Buck Bros 30%
Charles Buck 30%
L. & I. J. White, Tanged ..... 25&5%

Cold—

Cold Chisels, good quality lb. 14@16c
Cold Chisels, fair quality ..... lb. 12c
Cold Chisels, ordinary ..... lb. 8@9c

Chucks—

Beach Pat., each $8.00 ..... 20%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks Patent and Standard 30%
Drill Chucks, New Model ..... 2 %
Independent Lathe Chucks 40%
Improved Planer Chucks 20%
Universal Lathe Chucks 40%
Face Plate Jaws 35%
nion Mfg. Co.:
Combination 40%
Czar Drill 30%
Geared Scroll 30%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—

Adjustable, Hammers' ..... 20@20&5%
Adjustable, Stearns' 30%
Cabinet, Sargeant's ..... 45&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers', Sargent's ..... 50&10%
Besty, Parallel ..... 33⅓&10%
Lineman's, Utica Drop Forge & Tool Co 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Walk—

Star Socket, All Steel ..... ₱ doz. $4 00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net

Cleavers, Butchers'—

Foster Bros 30%
New Haven Edge Tool Co.'s ... 40@40&5%
Nichols Bros., Flat Rd., 30%; Rd. Rd., 40%
Fayette R. Plumb 25%
P., S. & W ..... 33⅓&5@33⅓&10%
L. & I. J. White 25%

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet ..... ₱ doz $7.20
Mascotte Toilet ..... ₱ doz. $8.40
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

Clips, Axle—

Eagle and Superior ¼ and 5-16 inch ..... *65c&10@70%*
Norway, ¼ and 5-16 inch ... *65@65c&5%*

Cloth and Netting, Wire —See *Wire, &c.*

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) ..... *60c&10@60c&10c&10%*

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Pope & Stevens' list 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather, Pope & Stevens' list 40%

Compasses, Dividers, &c.

Ordinary Goods ..... *70c&10@75%*
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double ..... 65&10%
Calipers, Inside or Outside ..... 65&10%
Calipers, Wing 60%
Compasses ..... 50&5%
J. Stevens A. & T. Co ..... 25&10%

Coolers, Water—

S. S. & Co.: 2-gal., $14.00; 3-gal., $16.00; 4-gal., $18.50; 6 gal., $23.00.

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab ..... *lb. 21@23c*
Braided, White, Common, lb. .. *16@17c*
Cable Laid Italian.. lb. A, 18c; B, 16c
Common India ..... *lb. 8½@9½c*
Cotton Sash Cord, Twisted .... *10@15c*
Patent Russia ..... *lb. 12 @13c*
Cable Laid Russia ..... *lb. 13½@14c*
India Hemp, Braided ..... *lb. 14@15c*
India Hemp ..... *lb 9@10c*
Patent India ..... *lb. 10 c*
Pearl Braided, cotton ..... ₱ lb 10¢
Massachusetts, White ..... ₱ lb 20¢
Massachusetts, D ab ..... ₱ lb 24¢
Eddy tone Braided Cotton ..... ₱ lb 18¢
Harmony Cable Laid Italian ..... ₱ lb 18¢
Osgawan Mills:
Crown, Solid Braided White ... ₱ lb 18¢
Braided, Giant, White ..... ₱ lb 17¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 12¢
Braided India ..... 18¢
Phœnix, White ..... 17¢
Samson:
Braided, Drab Cotton ..... ₱ lb 31¢
Braided, Italian Hemp ..... ₱ lb 31¢
Braided, Linen ..... ₱ lb 44¢
Braided, White Cotton, Spot ... ₱ lb 27¢
Silver Lake:
A quality, Drab, 40¢ ..... 15&10%
A quality, White, 35¢ ..... 15&10%
B quality, Drab, 35¢ ..... 15&1 %
B quality, White, 30¢ ..... 15& 0%
Italian Hemp, 40¢ ..... 15&10%
Linen, 57½¢ ..... 15&10%

Wire, Picture—

Braided or Twisted ..... *70@70c&10%*

Corn Knives and Cutters —See *Knives, Corn.*

Crackers, Nut—

Little Giant ..... ₱ gr. $24.00
Turner & Seymour Mfg. Co 50%

Cradles—

Grain *50%*

Crayons—

White Round Crayons, gross ... *5@6c*
Cases, 100 gro., $4.50 @$5 00, at factory.
Metal Workers' Crayons ... gr. $2.50
Soapstone Pencils, round, flat or square ..... gr. $1.50
Rolling dill Crayons ..... gr. $2.50
Ra Iron 1 Crayons, compo 1 ion). gr. $2.00
} Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden ..... ₱ doz. $10.00

Cutters—

Glass—

Smith & Heminway Co 40%

Meat—

American 30%

Nos	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Connecticut:

N	0	1	8	10	12
each	$1 75	2.25	3.00	3.00	3.50

Enterprise ..... 25@25&7½%

Nos	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz ..... 33⅓&10%

Nos	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ₱ doz ..... 60&10&10@70%

Nos	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ₱ doz. $26.00 ..... 60%
Little Giant, ₱ doz ..... 33⅓@33⅓&5%

Nos.	305	310	312	340	322
	$35.00	$48.00	$44 90	$72.00	$68.00

Miles' Challenge, ₱ doz ..... 45@45&10%

Nos	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₱ doz. $24.00 .. 33⅓&5%
Woodruff's, ₱ doz 40%

Nos	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—

Henry Diss on & Son:
Slaw, C rn Grater, &c 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 50@50&10%
Slaw Cutters, 1 Knife, ₱ gr ... $15@$18
Slaw Cutters, 2 Knife, ₱ gr ... $20@$27

Tobacco—

All Iron, Cheap ..... *doz. $4.25@$4.50*
Enterprise ..... 25@30%
National, ₱ doz. $21.00 ..... 40%
Sargent's, ₱ doz. $24.00 ..... 60@60&10%

Washer—

Appleton's, ₱ doz. $16.00 ..... 60&10@60&10&10%
Bonney's ..... ₱ doz. $4.75

Diggers, Post Hole, &c.—

Iwan's Improved Post Hole Auger ... 40%
Iwan's Perfection Post Hole Digger ... ₱ doz. $10.00
Never-Break Post Hole Diggers, ₱ doz. $24.00 ..... 60%
Samson, ₱ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill.. each $1.75@$2.00
Blacksmiths' Self-feeding ..... each $3.75@4.00
Bench Drills, Stearns' 50%
Breast, Millers Falls, each $3.00 .15&10%
Breast, P., S. & W ..... 30@30&10%
Goodell Automatic Drills .. 40&5@40&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's, P. S. & W ... 40&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓&

Twist Drills—

Standard List *65%*

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9.. 40%
Buck Bros 30%
Buck Bros' Screw Driver Bits 27½%
Champion ..... 40&10%
Disston's Flat Blade, Electric, &c 70%
Douglass Mfg. Co ..... 20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
New England Specialty Co ..... 50&10%
New York, Manhattan and Handy ... 20%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60 .. 50&10@50&10&10%
Nos. 20 and 40 ..... 66⅔@66⅔&10%
Screw Driver Bits ..... ₱ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 70&10%
No. 80 ..... 75&10%

Egg Beaters—See *Beaters, Egg.*

Emery—*Nos. 4 to 5½ to Flour, CF:*

	46 gro.	180 gro.	F. F. F.
Kegs	*lb. 4½c*	*5 c*	*3 c*
½ Kegs	*lb. 4¾c*	*5½c*	*3¼c*
¼ Kegs	*lb. 5 c*	*5½c*	*3½c*
10-lb cans, 10 in case	*6 c*	*6½c*	*5½c*
10-lb. cans, less than 10	*10 c*	*10 c*	*8c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice —See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's ..... 50&10%

Faucets—

Cork Lined ..... *70c&5@70c&10c&5%*
Metallic Key, Leather Lined ..... *70@70c&10%*
Red Cedar ..... *50@50c&5%*
B. & L. B. Co.:
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key. 50&10%
John Sommer's Duplex Metal Key 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined .. 50%
John Sommer's Reliable Cork Lined. 50&10%
John Sommer's Common Cork Lined. 70%
John Sommer's Chicago Cork Lined .. 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's Perfection Cedar 40%
Star ..... 60@60&5%
Star, Metal Plug new list ..... 40@40&5%
Lockport, Metal Plug, reduced list. 60&5%
Self Measuring:
Enterprise, ₱ doz. $36.00 ..... 40%
Lane's, ₱ doz. $36.00 ..... 83⅓%
National Measuring, ₱ doz. $66.00 ... 40%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.
Best Brands ..... *70@70c&10%*
Good Brands ..... *75@75c&10%*
Fair Brands ..... *75c&10@80%*
Second Quality .... *80c&10@80c&10c&10%*

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 ..... *35%*

Fixtures, Grindstone—

Net Prices:

Inch	15	17	19	21	24
Per doz.	$3.50	3.55	3.75	4.50	5.25

Stowell's Giant Grindstone Hanger ... ₱ doz. $6.00
Stowell's Grindstone Fixtures 50%
P., S. & W. Co ..... 50&10&10%
Reading Hardware Co ..... 30&20&10%
Sargent's Patent ..... 60&10@60&10&10%

Fluting Machines—

See *Machines, Fluting.*

Fodder Squeezers—

See *Squeezers, Fodder.*

Forks—

Aug. 1, 1899, list.
Hay, 2 tine *65%*
Hay, 3 tine *66⅔%*
Manure, 4 tine *70%*
Manure, 5 and 6 tine *70%*
Spading ..... *70c&5%*
Iowa Dig-Ezy Potato 65%
Victor, Hay 70%
Victor, Manure ..... 70&8%
Victor, Header ..... 70&12½%
Champion, Hay ..... 60&20%
Champion, Manure ..... 70&5%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure 70%
Columbia, Spading ..... 70&10%
Hawkeye Wood Barney 4 tine ₱ doz. $5.00; 6 tine, $6.00.
Plated.—See *Spoons.*

Frames—

Saw—

Red, Polished and Varnished.. doz. $1.05@$1.10
White ..... *doz. 75@80c*

Screens, Window and Door—

Bonanza Window Screens ... 50&10&2½%
Phillips' Window Screen Frames 60%
Porter's Extension Window Screens .. 50&10%
Wabash Spring Adj. Screen 50%
Warner's Screen Corner Irons 50%

Freezers, Ice Cream—

Qts	2	3	4	6	8	10
Best	$1.40	1 60	1.85	2 30	3.00	3.90
Good	$1 25	1.35	1.70	2 05	2 65	3.50
Fair	$1.00	1.10	1 30	1.75	2.30	2.90

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.
Hemp Fuse	*$2.60*
Cotton Fuse	*2.90*
Single Taped Fuse	*3.50*
Double Taped Fuse	*4.70*
Triple Taped Fuse	*5.70*

} List

Gates, Molasses and Oil—

Stebbin's ..... *80@80c&10%*

Gauges—

Marking, Mortise &c ..... *60c&10@60c&10c&10%*
Barrett's Comb. Roller Gauge ..... ₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Rabbet Gauge ..... 25&10%
Wire, Brown & Sharpe's 35%
Wire, Morse's 35%
Wire, P., S. & W. Co ..... 10@10&5%

Gimlets—
Nail, Metal, Assorted ..gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro. $4.00@4.50
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window
List Jan. 1, 1898.
Small lots from store:
Eastern.....80&10%
Western.....80&15%
From Factory, with Frt. Allowance:
Carloads.....80&15%
1000 boxes or more Gulf Ports....85&10%
3000 boxes or more.....80&20%
5000 boxes or more.....85%

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.).....
33⅓@43⅓%
List C, Cans (½ gal., gal.)....25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Common Grade.....gro. $5.00@6.00
Allerton's Axle:
1 ℔ Tins, ℔ gr.....$9.00
3 ℔ Tin Pails, ℔ doz., $2.00; 5 ℔, $3.00; 10 ℔, $6.00.
25 ℔ wood pails.....℔ doz. $12.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Dixon's Everlasting, in bxs..℔ doz. 1 ℔ $1.20; 2 ℔ $2.00

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
gro.
Peg Patent, Leather Top..$4.90@5.25
Peg Patent, Plain Top....$3.50@3.75
Sewing, Brass Ferrule. ....$1 50@1.60
Saddlers', Brass Ferrule..$1 35@1.45
Peg, Common.....$1.25@1.35
Brad, Common.....$1.50@1.75

Halters and Ties—
Covert Mfg. Co., Web.....45&2%
Covert Mfg. Co., Jute Rope.....45&2%
Covert Mfg. Co., Sisal Rope.....30&2%
Covert's Saddlery Works', 96 list, W-b..60&10%
Covert's Saddlery Works, Leather60&10%
Covert's Saddlery Works, Jute....60&5%
Covert's Saddlery Wo ks, Sisal....60%
Covert's Saddlery Works, Manila..60&5%
Covert's Saddlery Works, Cotton....70%

Hammers—
Handled Hammers—
Heller's Machinists'.....40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40&10%
Pecx, Stow & Wilcox.....40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail....33⅓&5%
Engineers' and B. S. Hand.....50&10%
Machinists' Hammers.....50&10%
A. E. & A. E., Bell Face Nail....33⅓&5%
Riveting and Tinners'.....33⅓&5%
Sargent's C. S. New List.....45@45&10

Heavy Hammers and Sledges—
3 lb. and under...*lb.* 45*c*
3 to 5 lb.....*lb.* 36*c* } 75&5@75
Over 5 lb.....*lb.* 30*c* } &10&5%
Note.—Lower net prices sometimes made by jobbers.
Wilkinson's Smiths'.....9½c@10c lb.

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Hoe, Rake, Fork, &c.....50&10@60%
Shovel, &c., Wood D Handle.50@50&5%

Cross-Cut Saw Handles—
Atkins'.....40%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—
Auger, assorted.....gro. $3.25@$3.50
Auger, large.....gro. $3.75@$3.00
Brad Awl.....gro. $1.40@$1.50
Chisel Handles:
Apple Firmer, gro ass'd. $3.25@ $3.50; large, $3.75@$3.00.
Hickory Firmer, gro. ass'd. $3.25 @$3.50; large, $3.50@$3.75.
Socket, gro. ass'd, Firmer, $1.50@ $1.60; Framing, $3.50@$3.75.
File, assorted.....gro. $1 00@$1 15
Hammer, Hatchet, Axe, &c...50&10%
Hand Saw, Varnished, doz. 75@80c
Not Varnished.....55@60c
Plane Handles:
Jack, doz. 23@25c; Jack Bolted..55@60c
Fore, doz. 35@38c; Fore, Bolted..70@75c

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch.....	3	4	5	6	8
Doz.....	$1.10	1.45	1.80	2.10	2.75

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch.....	3	4	5	6
Doz.....	$1.50	1.90	2.60	3.35

Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Advance.....55%
Cleveland.....60%
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Czar Bail Bearing, ℔ doz. pair $8.50
No. 10 Roller Bearing..doz. pr. 5.50
No. 20 Roller Bearing .doz. pr. 4.50
Nickel.....50%
J. G. C.....50&2&10%
Lane Bros.:
Parlor, Standard.....40&5&2½%
Parlor, New Model.....40&3½%
Barn Door, Standard.....60&2½%
Covered.....50&10&10%
Special.....60&5%
Lawrence Bros:
Crown.....60%
New York.....60%
Sterling.....60%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
Stowell Mfg. and Foundry Co.:
Badger.....60%
Baggage Car Door.....33⅓%
Climax Anti-Friction.....50%
Elevator.....40%
Interstate.....50&10%
Magic.....50%
Matchless.....50&10%
Nansen.....50&10%
Parlor Door.....50%
Railroad.....50&10%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500.....40&15%
Wild West.....50&5%
Zenith for Wood Track.....50&10%
Taylor & Boggis Foundry Co.:
Kidder's.....50&50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
L. T. Roller Bearing.....60&10%
New Era.....50&10%
New Richards.....60%
O. K. Roller Bearing.....60&10&5%
Prindle Improved.....60&10%
Richards' Improved.....60&10%
Richards' Single Track.....50&10%
Wilcox Dwarf Roller Bearing 40&10%
Wilcox-Ives.....60&10%
Wilcox Tandem Roller Bearing.. 60&10%
Wilcox Trolley Ball Bearing..... 40%
Wilcox Trolley Roller Bearing..50%
Wilcox Trolley Roller Bearing, Fire..... 40&10%

Extra 5&10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp, ℔ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands.....40&10@50%
Cheaper Brands....50&10@50&10&5%
Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind Hinges—
Lull & Porter Old Style Shutter:

No.....	1	1½	2	2½
Doz. pair..	$0 65	.60	.56	.48

1868 Old Pattern Blind Hinge:

No.....	1	3	5
Doz. pair.....	$0.75	1.35	2.60

Parker.....70@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5.....60⅔&10%
Sargent's, Nos. 11 & 13..... 7 &10@70&10&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter.....65&10&5%
Buffalo Gravity Locking, Nos. 1, 3 and 5.....65&10&10%
Champion Gravity Locking, No. 75.75%
1868, Old Pat'n, Nos. 1, 3 & 5.....75%
Tip Pattern, Nos. 1, 3 and 5.....75%
Double Locking, Nos. 20 and 25....70%
Empire, Nos. 101 and 103.....65&10%
Niagara Gravity Locking, Nos. 1, 3 and 5.....65&10&10%
Noiseless, Nos. 50, 60, 65 and 55..... 65&10&5%
O. S. Lull & Porter.....65&10&10%
Pioneer, Nos. 060, 45 and 5½..... 65&10&5%
Steamboat Gravity Locking, No. 10..... 75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets $1.20.....20&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.....	1	2	3
Hinges with Latches..	$1.90	2.50	4.25
Hinges only.....	1.30	1.55	2.20
Latches only.....	0.70	0.70	1.20

New England:
With Latch.....doz. $1.75@1.80
Without Latch....doz. $1.40@1.45
Reversible Self-Closing:
With Latch.....doz. $1.65@1.75
Without Latch.....doz. $1.30@1.35
Western:
With Latch.....doz. $1.60@1.65
Without Latch.....doz. $1.00@1.05

Spring Hinges—
Holdback, Cast Iron..... gro. $7.00@7.50
Non-Holdback, Cast Iron..... gro. $6.00@$6.50

J. Bardsley:
Bardsley's Patent Checking.....10%
Bommer Bros.:
Bommer's.....40%
Chicago Spring Butt Co.:
Chicago.....25%
Garden City Engine House..25%
Keene's Saloon Door.....25%
Coleman Hdw. Co.:
Champion Holdback....℔ gr. $9.00
J. G. C.....℔ gr. $9.00
Nickel.....℔ gr. $9.00
Lawson Mfg. Co.:
Marchi as.....25%
Matchless Pivot.....40%
Payson Mfg. Co.:
Oblique, Dbl. Acting.....50@50&5%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr..... $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme.....30&5%
American.....30%
Columbia, No. 14.....℔ gr. $8.00
Columbia, No. 18.....℔ gr. $24.00
Crown.....30%
Gem.....30%
Knoxall.....℔ gr. $9.00
Oxford.....30%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..66⅔%
Heavy Strap Hinges..70%
Light T Hinges....50&10%
Heavy T Hinges...60&10%
Extra Heavy T Hinges... } Extra 66⅔% 20%@25%
Hinge Hasps.....55%
Stanley's Corrugated Heavy Strap.....70%
Stanley's Cor. Ex. Heavy T..66⅔%
NOTE.—*Change in base discounts.*
Rolled Plate.....70@70&5%
Screw Hook and Strap. { *6 to 12 in..lb* 3½@3¾c; *14 to 20 in..lb.* 3¼@3½c; *22 to 36 in..lb.* 3 @3¼c
Screw Hook and Eye:
¾@1 inch.....*lb.* 5½@5¾c
⅝-inch.....*lb.* 6½@6¾c
½-inch.....*lb.* 8½@8¾c

Hoes—
Eye—
Scovil and Oval Pattern..... 60&5@60&10&5%
Grub, list Feb. 23, 1899....65@65&10%
D. & H. Scovil .....35@35&5%
Handled—
Aug. 1, 1899, List‡
Field and Garden.....75&2%
Ladies', Boys', Toy and Onion... 70&10&10%
Street and Mortar.....75&7½&2%
Cotton.....70&10&10&5&2%
Planters'.....70&30%
Weeding.....75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe..... 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz.....75&10&2%
Ft. Madison Mattock Hoe, ℔ doz....$4.50
Ft. Madison Sprouting Hoe, ℔ doz..$4.80
Ft. Madison Dixie Tobacco Hoe..... 75&20%
Kretsinger's Cut Easy, per doz....75&2%
Warren Hoe.....60%

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders—
Bit—
Angular, ℔ doz. $24.00..... 45&10%
File and Tool—
Nicholson File Holders and File Handles 33⅓%

Hooks—
Cast Iron—
Bird Cage, Reading..... } .50&10@60%
Bird Cage, Sargent's List... }
Clothes Line, Sargent's List.....35&10%
Ceiling, Sargent's List.....40@40&10%
Clothes Line, Stowell's.....70%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's.....70%
Coat and Hat, Reading.....70@75%
Coat and Hat, Sargent's List.....35&10%
Coat and Hat, Wrightsville.....65&10%
Harness, Reading List.....70&10@75%
Wire—
Belt.....80&10@80&20%
Atlas, Coat and Hat.....50@50&10%
Czar Harness.....50&10%
Wire Coat and Hat:
Acme.....60@60&5%
B. B.....70@70&5%
V Brace, Chief and Czar.....50&10%
Gem.....60⅔%
Bright Wire Goods—See *Wire.*
Wrought Iron—
Box, or Case, Octagon Steel.... doz. $2.10@2.20
Cotton.....doz. $1.05@1.15
Picture, T. & S. Mfg. Co.....75%
Tassel, T. & S. Mfg. Co.....50&10%
Wrought Staples, Hooks, &c.— See *Wrought Goods.*
Miscellaneous—
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass.....*Nos.*	1	2	3	4
Best.....	$1.60	1.75	2.00	
Common..	$1.50	1.50	1.50	1.75

Potato and Manure.....75&15%
Whiffletrees.....*lb.* 4¼c
Hooks and Eyes:
Brass.....70@70&10%
Malleable Iron.....70&10@75%
Covert Saddlery Works' Self Locking Gate and Door Hook..... 60&10%
Crown Picture.....50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....*ft.* 4¾@ 5½c
3-ply Standard.....*ft.* 5¼@ 6 c
4-ply Standard.....*ft.* 6½@ 6¾c
3-ply extra.....*ft.* 6½@ 7½c
4-ply extra.....*ft.* 7½@ 8½c
High Grade.....*ft.* 9 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft.* 5¼@6c
Fair quality.....*ft.* 7 c
Good quality.....*ft.* 8 @ 8½c

Irons—Sad—
From 4 to 10..... .....*lb* 3¼@3½c
B B. Sad Irons..... .....*lb.* 3¾@4c
Chinese Laundry..... ....*lb.* 5@5¼c
Chinese Sad.....*lb.* 3¾@4c
Mrs. Potts', per set:

Nos 50	55	60	65
85@$1.00	78@93c	95@1.10	89@1.03

New England Pressing..lb.. 3¼@3½c

Soldering—
Soldering Coppers.....*lb.* 28@30c
Covert Mfg. Co.....20&2%

Pinking—
Pinking Irons.....doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel.....45&2%
Daisy.....70%
Ill. I. & B. Co Common.....70@75%
Lockport.....40@40&10%
Victor.....60%
Lane's Steel.....33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 10, '99 15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Dick's Butcher Knives..... .....40%
Foster Bros.' Butcher, &c.....30%
Nichols' Butcher Knives.....50%
Hay and Straw—See *Hay Knives.*
Corn—
Ft. Madison Cut-Easy, ℔ doz.....$3.25
Drawing—
Standard List.....75&5@75&10%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
Swan's.....75@75&5&2½%
Watrous.....30&10@40%
L. & I. J. White.....20&5@25%
Cautelo's Folding.....50@50&5%
Hay and Straw—
Blizzard.....$5.75@6.00
Iwan's Sickle Edge.....℔ doz. $11.50
Lightning.....$7.50
Mincing—
Buffalo.....℔ gro. $15.00
Smith's, ℔ doz., Single, $3; Double, $3 45&50%
Miscellaneous—
Farriers'.....doz. $2 00@3.00
Wostenholme's.....℔ doz. $3.00@3.25
Knobs—
Base, 2¼-inch, Birch, Rubber tip, gro.....$1.50@1.55
Carriage, Jap, all sizes..gro. 30@35c
Door, Mineral.....doz. 78@80c
Door, Por. Jap'd.....doz. 85@90c
Door. Por. Nickel....doz. $2 10@2.20
Bardsley's Wood Door, Shutter, &c....10%
Picture, Sargent's.....70&10%
Snow's Victor.....50&10%

Ladles—Melting—
L. & G. Mfg. Co.....60%
P., S. & W.....40@40&10%
Reading.....50&10%
Sargent's.....40@40&10%
Lanterns—Tubular—
Regular Tubular.....doz. $4.00@4.50
Side Lift Tubular....doz. $4.25@4.75
Square Lift Tubular..doz. $4.21@4 75
Other Styles.....40&10@40&10&5%
Meyrose Side Lift Tubular, doz. $8.50.... 45&10%
Bull's Eye Police—
2¾-inch flash light....doz. $3.50@3.75
3-inch flash light.....doz. $4.00@4.25
2¾-inch regular.....doz. $3.25@3.50
3-inch regular.....doz. $3.50@3.75

Latches, Thumb—
Roggin's Latches.....doz. 35c@45c

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Small.....doz. 45c; *large, 55c*
Covert Mfg. Co.....45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
3 x 4 ft. x ¼ ..... ₩ 100 $11.00
Other sizes, Iron ..... 70&10%
Other sizes, Brass and Bronze 70%
Excelsior ..... 60@60&10%
Payson's:
Solid Grip Nos. 643 and 644, ₩ 100, $11.00
Bronzed Iron 70%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	*$2.50*	*2 25*	*2 00*
75 feet			*$1.50*

Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $5.50; No. 2, $5.00; No. 3, $7.50 ₩ gr. 30%

Locks, &c.— Cabinet—

Cabinet Locks ..... *33⅓@33⅓&7½%*

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]
Reading Hardware Co. 40%
R. & E. Mfg. Co. ..... 47½ & 0%
Sargent & Co. ..... 40@40&10%
Slaymaker-Barry Co. ..... 30@85%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

Wrought Iron, list Dec. 5, '97 ..... *70@70&10%*
Dog Collar, S. B. Co. 40%
R. & F. Mfg. Co. Wrt. Steel and Brass. 50%
S. B. & Co. 40%

Sash, &c.—

Fitch's Bronze and Brass 66⅔%
Fitch's Iron 70%
Ives' Patent ..... 62½&10@66⅔&10%
Payson's Perfect 70%
Payson's Signal (new list) 75%
Reading ..... 60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Douglas	$2.50	$3.00
Jennings'	2.50	3.00
Millers' Falls		4.75
Snell's, Rice's Pat.	2.50	2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 30%

Washing—

Wayne American, ₩ doz. $27.00
Western Star, No. 2, ₩ doz. 28.00
Western Star, No. 3, ₩ doz. 30.00
St. Louis, No. 41, ₩ doz. 60.00
Carload lots 10% off, freight allowed.

Mallets—

Hickory ..... *45&5@50&5%*
Lignumvitæ ..... *45&5@50&5%*
Tinners', Hickory and Applewood, doz. ..... *50@55c*
Fiber Head Stearns' ..... 80&10%

Mats—

Door—
Elastic Steel (W. G. Co.) 10%

Mattocks—

List Feb. 23, 1899 ..... *65@65&10%*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, list Jan. 1, '88 ..... *60&5@60&10&5%*
Net prices are often made on some goods which are lower than above discounts.
Enterprise Mfg. Co., list Jan. 17, '93. 30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 60&10%
Parker's Upright ..... 30&10@40%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

	10	*12*	*14*	*16-inch*
Cheap				*$1.60@$1.75*
Good	*3.00*	*3.25*	*3 50*	*3.75*
High Grade	*4 00*	*4.25*	*4.50*	*4 75*

Pennsylvania and Continental 60&10&5%
Quaker City ..... 70&5%
Great American ..... 70&5%
Philadelphia:
Styles M., S., C., K., T. ..... 70&10%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 60&10%
Drexel and Gold Coin, low list 50%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 ..... *80@80&10%*
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10
A. C.	25¢	23¢	22¢	21¢	21¢
					40&5%
Capewell	19¢	18¢	17¢	16¢	16¢10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢...40%
Champlain	28¢	26¢	25¢	24¢	23¢
					40&5&2%
Maud S.	25¢	23¢	22¢	21¢	21¢...50%
Neponset	23¢	21¢	20¢	19¢	18¢...40%
Putnam	23¢	21¢	20¢	19¢	18¢.33⅓%
Standard	23¢	21¢	20¢	19¢	18¢...40%
Star	23¢	21¢	20¢	19¢	18¢
					35& 5%
Vulcan	23¢	21¢	20¢	19¢	18¢
					33⅓&5%

Picture—

	1½	2	2½	3	3½ in.
Brass Head	*.45*	*.60*	*.70*	*.95*	*1.00 gro.*
Por. Head	*..*	*1.10*	*1.10*	*1.10*	*.. gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.
Cold Punched. *Off Mfrs. or U. S. Standard list.*
Hexagon, plain ..... *4.00@4.20c*
Square, plain ..... *4.00@4.20c*
Square, C. T. & R. ..... *3.80@4.00c*
Hexagon, C. T. & R. ..... *4.30@4.50c*
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd. Square ..... *4.20@4.40c*
Hexagon ..... *4.40@4.60c*
NOTE.—*Tapped Nuts are now 2-10c. higher than above.*

Oakum—

Best or Government ..... *lb. 5¾c*
Navy ..... *lb 4¾c*
U. S. Navy ..... *lb. 5¼c*
Plumbers' Spun Navy *3¾c*
In carload lots ¼c lb. off f. o. b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... *40&10@50%*
Tin or Steel ..... *60&10&10@70&5%*
Zinc ..... *60&5@65%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co ..... 70&70&10%

Openers, Can—

French ..... *doz 35c*
Iron Handle ..... *doz. 25@27c*
Sprague, Iron Hdle..per doz 35@40c
Sardine Scissors...doz. *$1.75@$3.00*
National, ₩ gro ..... $1.75@$2.00
Stowell's ..... per doz. 40@45c

Packing—

Rubber—

Standard, fair quality ..... *70&10@75%*
Inferior quality ..... *75&10@80%*
Extra ..... *60&5@60&10&5%*
Jenkins' Standard, ₩ lb 80c ..... 25@25&5%

Miscellaneous—

American Packing ..... *9@10c lb.*
Cotton Packing ..... *13@14c lb.*
Italian Packing ..... *10½@11¼c lb.*
Jute ..... *5@5¾c lb.*
Russia Packing ..... *12@13c lb.*

Pails—

Creamery—
S. S. & Co., with gauges.. No 1 $6.50; No. 2, $6.75 ₩ doz.

Galvanized—

Inch	*10*	*12*	*14*
Water, Standard, gro	*$23 00*	*$26 00*	*$29.00*
Water, Regular	*19 00*	*22.00*	*25.00*
Water, Heavy	*22.00*	*25.50*	*28.00*
Fire, Rd. Bottom, gro	*31.00*	*33.00*	*35.00*
Well, gro	*27.00*	*29.00*	*31.00*

Pans—

Dripping—
Large Sizes ..... *lb. 4¾c*
Small Sizes ..... *lb. 5¼c*

Fry—
Standard List ..... *75¢1.20@80%*

Roasting and Baking—

Regal, S. S. & Co., ₩ doz., Nos. 5,$4.50; 10, $5.00; 20 $5.50; 30, $6.00
Simplex, ₩ gro., No. 40, $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37 50; 160, $43.00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing: 500 sq. ft.	
Light wt., 20 sq. ft. to lb	*$0 40@0 45*
Medium wt., 12 sq. ft. to lb	*$0.60@0.65*
Heavy wt., extra quality	*$0.95@1.05*
Medium Grades Water Proof Sheathing	*$0 80@1.25*
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$45.00@50.00*

York Haven Waterproof Sheathing... $1 35@1.75

Tarred Paper.
1 ply (roll 500 sq ft), ton ..... *$35 00@40.00*
2 ply, roll 100 sq. ft *90c*
3 ply, roll 100 sq. ft *$1.30*

Sand and Emery—

List April 19, 1886 ..... *50¢10@50¢10¢10%*

Parers—

Apple—

Advance	₩ doz.	$4.50
Baldwin	₩ doz.	$5.00
Bonanza	each	$5.00
Dandy	each	$7.50
Eureka, 18-8	each	$16.00
Family Bay State	₩ doz.	$12.00
Hudson's Lightning Star	₩ doz.	$4.00
Hudson's Rocking Table	₩ doz	$5.50
Improved Bay State	₩ doz.	$27.00@30.00
New Lightning	₩ doz.	$5.50
Reading 72	₩ doz.	$4.00
Reading 78	₩ doz.	$7.00
Turn Table '98	₩ doz.	$5 50
White Mountain	₩ doz.	$4.00

Potato—

Saratoga	₩ doz.	$5.50
White Mountain	₩ doz.	$4.50

Picks and Mattocks—

List Feb 23, 1899 ..... *65@65¢10%*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—
Brass ..... *60@60¢5%*
Iron, list Nov. 11, '85 ..... *60@60¢5%*

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in ..... *60@50¢10%*
Extra Heavy, 2 6 in ..... *50¢10@50%*
Fittings ..... *60@60¢10%*

Pipe, Wrought Iron—

Factory Shipments.

List February, 1899.
Plain and Galvanized:
Carload lots ..... *50¢10¢10%*
Less than carload lots ..... *50¢10¢2½%*
Screw and Socket Casing ..... *37½¢5%*
Inserted Joint Casing ..... *32½¢5%*
Cold Drawn Seamless Steel Tubing *60%*

Planes and Plane Irons—

Wood Planes—
Molding ..... *40¢2½@40¢5%*
Bench, First quality ..... *45¢10@45¢10¢5%*
Bench, Second quality ..... *50¢10@50¢10¢5%*
Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Gage Self Setting 35%

Iron Planes—
Bailey's (Stanley R. & L. Co) ..... 50&10&10@50&10&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10&10@25&10&10&10%
Sargent's ..... 50&10@60%

Plane Irons—
Wood Bench Plane Irons ..... *50¢10%*
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to £
Stanley R. & L. Co ..... 50&10@50&10&10%
L. & L. J. White ..... 20&5@25%

Plates—

Felloe ..... *lb. 3½@3¾c*
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 50%

Pliers and Nippers—

Gas	*7*	*8*	*9*	*10-in.*
Best	*$3.25*	*$5.00*	*$4.75*	*doz.*
Good	*$1.40*	*2.25*	*2.75*	*3.25 doz.*

Acme Nippers ..... 40@40&5%
Bernard's:
Parallel Pliers, &c 33⅓%
Paragon Pliers 50%
Lodi Pliers 50%
Elm City Fence Pliers 33⅓%
Button's ..... 65@70%
Heller's Farriers' Pincers and Tools... 40@40&5%
Morrill's Parallel, ₩ doz. $12.00.. 30&5%
P., S. & W. Cast Steel ..... 30&10@40%
P., S. & W. Tinners' Cutting Nippers, 40@40&5%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... *70¢10¢10@75¢10¢10%*
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co ..... 70&10&10@70&10&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz., No. 1, $7.20; No. 2, $11.00; No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Claziers'—

Bulk and 1 lb. papers.. lb. *10¼@11¼c*
½-lb. papers ..... *lb. 11 @12 c*
¼-lb. papers ..... *lb. 11½@12½c*

Pokes, Animal—

Ft. Madison Hawkeye ..... ₩ doz. $3.25
Ft. Madison, Western ..... ₩ doz. $3.75

Police Goods—

Manufacturers' Lists ..... *25@25&10%*
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 33⅓&40%
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ ℔ boxes, ₩ doz. $1.35; 1 ℔ boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.35; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₩ doz. $1.50

Stove—

Black Eagle Bensine Paste, 5 ℔ cans... ₩ ℔ 10¢
Black Eagle, Liquid, ¼ pt. cans..... ₩ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00..... 50%
Joseph Dixon's, ₩ gr. $5.75..... 10%
Dixon's Plumbago..... ₩ ℔ 8¢
Fireside..... ₩ gr. $2.50
Gem, ₩ gr. $4.50..... 10%
Japanese..... ₩ gr. $3.50
Jet Black..... ₩ gr. $3.50
Peerless Iron Enamel, ½ pt. cans..... ₩ doz. $1.50
Wynn's Black Silk, 5 ℔ pail..... ₩ ℔ 12¢
Wynn's Black Silk, ½ ℔ box, ₩ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₩ doz. $0.75
Wynn's Black Silk, 8 oz. liq., ₩ doz. $1.00

Poppers, Corn—

Round or Square:
1 qt ..... *gro. $7.00@8.00*
1½ qt ..... *gro. 9 00@ 10.00*
2 qt ..... *gro. 10.50@ 11.50*
Quincy Corn Popper, 1 qt., ₩ gr. $16.50; 2 qt., $19.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots— Glue—

Enameled ..... *40¢5@40¢10%*
Tinned ..... *40@40¢5%*

Powder—

In Canisters:
Duck, 1 lb. each *45c*
Fine Sporting, 1 lb each *75c*
Rifle, ½-lb. each *15c*
Rifle, 1-lb. each *25c*
In Kegs:
Duck, 6½-lb. kegs *$2.25*
Duck, 12½-lb. kegs *$4.25*
Duck, 25-lb kegs *$8.00*
Rifle, 6¼-lb. kegs *$2.25*
Rifle, 12½-lb. kegs *$4.25*
Rifle, 25-lb. kegs *$8.00*
King's Smokeless:
Keg (25 ℔ bulk) $20 00
Half Keg (12½ ℔ bulk) $10.25
Quarter Keg (6¼ ℔ bulk) $5.25
Canister (1 ℔ bulk) $0.90
Case, 1 ℔ Canisters (50 ℔ bulk) $45.00
Half Case, 1 ℔ Canisters (25 ℔ bulk) $22.75
20&10&5%
King's Semi-Smokeless:
Keg (25 ℔ bulk) $16.00
Half Keg (12½ ℔ bulk) $8.25
Quarter Keg (6¼ ℔ bulk) $4.75
One Pound Can, bulk $0.50
20&5%

Presses—

Fruit and Jelly—
Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₩ doz. $13.00..... 50%
Crown Prince, ₩ doz. $15.00..... 50%
Diamond B, No. 2, doz. $22.; No. 3, $11..... 40%
Eureka, 5 ℔, doz., $16.00; 3 ℔ $15..... 40%
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15..... 40%
National, ₩ doz. $24.00..... 50%
Miller's Falls, No. 3, per doz. $12.00..... 15&10%
Pelican, ₩ doz. $9.00..... 4 &10%
Scranton No. 1 and 2, ₩ doz..... $9.00
Scranton, No. 3, ₩ doz..... $8.00

Pulleys—

Hay Fork, Swivel or Solid Eye ..... doz. $1.60@2.00
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00.....40%
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....60@60&10%
Japanned Screw.....70&10&10%
Japanned Side.....70&10&10%
Stowell's Ceiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction .. 60&10%
Stowell's Electric Light.....60%
Stowell's Side, Anti-Friction.....60&10%
Sash (Auger Mortise):
Common Sense, 1¾ in., ₱ doz., 18¢; 2 in., 20¢.
Empire.....1¾ in., 17¢; 2 in., 19¢
I. C.....1¾ in., 15¢; 2 in., 17¢
Ideal No. 13.....1¾ in., ₱ doz., 20¢
Improved.....1¾ in., 17¢; 2 in., 19¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy.....1¾ in., 16¢; 2 in., 19¢
Star.....1¾ in., 16¢; 2 in., 19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&5%
Pitcher Spout.....75%
Pump Leathers, all sizes.....gro. $6.00
Flint & Walling's Fast Mail.....50@55%
Flint & Walling's Pitcher Spout. 70&10%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—

Revolving (4 tubes)...doz. $3.50@3.75
Saddlers' or Drive, good...doz 65@70c
Spring, good quality.....$1.70@1 80
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50&5%
Niagara Hollow Punches.....45%
Niagara Solid Punches.....55%
Spring, Leach's Pat.....15%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co..... 35@3%&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....55%

Rail—

Barn Door, &c.—

Barn Door, Light..In. ½ ⅝ ¾
100 feet..... $2.00 $2.50 $3.00
B. D., for N. E. Hangers:
Small. Med. Large.
100 feet..... $2 20 2.70 3.20
Sliding Door, Bronzed Wr't Iron, ft. 6¼c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in.... lb. 36c..30%
Cronk's Double Braced Steel Rail, ₱ foot..... 3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch...$3.00
Lanes' Standard, ₱ 100 ft.....4.25
McKinney's None Better.....₱ ft. 3¢
McKinney's Standard.....₱ ft. 3½¢
Moore's, Wr't. Bracket, Steel.....3½¢
Stowell's Steel Rail, Plain 15%

Rakes—

Aug 1, 1899, List:
Cast Steel.....70&5&2%
Malleable.....66⅔%
Fort Madison Red Head Lawn.....$3.25
Fort Madison Blue Head Lawn.....$3.00

Rasps, Horse—

Disston's 75%
Heller Bros.....60&10& 0%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2004N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.....40&10%

Registers—

For points on Mississippi River and East:
Black Japanned .....50&10%
White Japanned.....50&10%
Bronzed Finishes.....30%
Nickel Plated.....30&10%
Electro Plated in Brass, &c..50&10%
White Porcelain.....20%
Solid Brass and Bronze Metal..20%
Note.—Higher prices are quoted in territory further West.

Rings and Ringers—

Bull Rings—

	⅛	⅜	½ Inch.
Steel	$0.75	0.83	0.88 doz.
Copper	1.25	1.30	1.50 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.50@5.00
Hill's Ringers, G. I.....doz. 75c
Blair's Rings.....₱ gr. $5.75@6.00
Blair's Ringers.....₱ doz. $0.90@1 00
Brown's Rings.....₱ gro. $6.00@6.25
Brown's Ringers.....₱ doz $1.00@1.10¢
Perfect Rings.....₱ gro. $9.00@9.50
Perfect Ringers, ₱ doz.....$1.25@1.35

Rivets and Burrs—

Copper.....40¢10@50%
Iron or Steel:
Tinners' .....55@55¢10%
Miscellaneous .....55@55¢10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme Stowell's Anti-Friction 50%
Barn Door, Sargent's list.60&10&10&70%
Lane's, Stay .....33⅓&5%
Stowell's Barn Door Stay...₱ doz. $1.25

Rope—

Manila, 7-16 in. and larger. lb. .. @15½c
Manila.....¾-inch lb. .. @16 c
Manila, ¼ and 5-16 in. lb. .. @16½c
Manila, Tarred Rope, 15 thread.....lb .. @15½c
Manila Hay Rope Med'm.lb .. @15½c
Sisal, 7-16 in. and larger, lb. .. @10½c
Sisal .....¾-inch. lb... @11 c
Sisal.....¼ and 5-16 in. lb. .. @11½c
Sisal, Hay Rope, 2 to 10 ply.....lb. .. @10½c
Sisal, Tarred, Medium Lath Yarn.....lb... @10 c
Cotton Rope
Best, ¼-in. and larger..lb. 13@14 c
Med'm, ¼-in. and larger lb. 10@12 c
Com., ¼-in. and larger.lb. 8@10 c
Jute Rope.....lb. .. @6¼c

Wire Rope—

List July 1, '99.....30¢&2½%

Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60%

Rules—

Boxwood..75&10¢10¢10@75&10¢10 ¢1 ¢10¢10%
Ivory ...40¢10¢10@40¢10¢10¢10¢10%
Lufkin's Steel.....50&10%
Lufkin's Lumber .....50&10%
Stanley R. & L. Co.;
Boxwood.....
75&10&10@75&10&10&10&10%
Ivory..... .40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Note.—Extra 5% often given on Circulars, Cross Cuts, &c., and extra 5@7½% on Hand, Butcher, &c.
Atkins' Circular.....50%
Atkins' Band.....50%
Atkins' Cross Cuts.....40%
Atkins' Mulay, Mill and Drag.....50%
Atkins' One-Man Saw.....40&10%
Atkins' Wood Saws.....40&10%
Atkins' Hand, Compass, &c.....40%
Diston Circular Solid and Inserted Tooth.....50%
Diston Band 2 to 14 in. wide.....60%
Diston Band ¼ to 1¼.....70%
Diston Crosscuts.....50%
Diston Narrow Crosscuts.....55%
Diston Mulay, Mill and Drag.....50%
Diston Framed Woodsaws.....35%
Diston Woodsaw Blades.....40%
Diston Woodsaw Rolls.....25%
Diston Hand-saws, Nos. 12, 99, 9, 10, d100, D8, 120, 7½, 77, 8.....25%
Diston Hand Saws, Nos 7, 107, 10½, 3, 1, 0, 00, Combination.....30%
Diston Compass, Keyhole, &c.....25%
Diston Butcher Saws and Blades....35%
C. E. Jennings & Co.'s.....25&5@30&5%
Peace Circular and Mill.....50%
Peace Cross Cuts, list Jan. 1, '99.....50%
Peace Hand, Panel and Rip.....30%
Richardson's Circular and Mill.....50%
Richardson's X Cuts, list Jan. 1, '99. 45&10&5%
Richardson's Hand, &c.....30%
Simonds' Circular Saws.....50%
Simonds' Crescent Ground Cross Cut Saws.....35%
Simonds' One-Man Cross Cuts....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....15@45&5%

Hack Saws—

Diston Concave Blades.....25%
Diston Keystone.....30%
Diston Hack Saw Frames.....30%
Griffin's complete.....50@50&10%
Griffin's Hack Saw Blades....50@5o&1 5
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....30%
Lester, complete, $10.00.....15&10%
Rogers, complete $4.00.....15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's ....30@30&10%
Hatch, Counter:
Platform, 4 lb. by ¼ oz...doz. $5.75
Two Platforms, 8 lb. by ½ oz..... doz. $16 00
Union Platform, Plain....$2.00@2.10
Union Platform, Striped..$2.15@2 25
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Pelouze Scales—Family, Candy, Grocers' and Postal .....New list net
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box, 1 Handle .....doz $2.25@2.75
Box, 2 Handle .... .. doz. $3.75@4.00
Ship, No. 1, doz. $3 50; No 2, $2.25@2.50
Adjustable Box Scraper (S. R. & L. Co.) $8.00.....40&10%
Foot, W. E. Pratt Mfg. Co. ₱ doz. $1.15@$1.25

Screen Window and Door Frames—See *Frames.*

Screw Drivers—

See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $2.50@2.75; 1¼, $2.85@3.10; 1¼, $3.35@3.50
Bench, Wood, Beech..doz. $3.50@2.75
Hand, Wood..... 35@40%
Hand, Grand Rapids.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....65&5@ ...%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....65@ %
Hand Rail, list Jan. 1, '81....82½&2%

Jack Screws—

Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40&5@40&10%
Sargent.....60&10@60&10&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.....50%
Flat or Round Head, Brass.....50%

Set and Cap—

Set (Iron or Steel) 60%
Sq. Hd. Cap.....55%
Hex. Hd. Cap.....50%

Wood—

List Nov. 10, 1898. Discounts adopted June 28, '99.
Flat Head, Iron.....90%
Round Head, Iron.....75%
Flat Head, Brass.....77½%
Round Head, Brass.....72½%
Flat Head, Bronze 72½%
Round Head, Bronze.....70%
Drive Screws.....82½%
Note.—An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes—

Scythe Snaths—

See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise.....25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2 25
Wood Hdle., 14 Awls, 6 Tools ... doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.60&10@60&10&5%
Fray's Adj. Tool H dle., No. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Milliers Falls Adj. Tool H'dle, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Round, assorted.....gro. $3 25@3.75
Octagon.....gro. $4 25@4.75
Knurled, Good.....gro. $6.00@6.50
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Snell's Corrugated, Cup Pt.....50%
Snell's Knurled, Cup Pt..... ....66⅔%

Rivet—

Regular list.....70@70&10&5%

Saw—

Aiken's Genuine.....₱ doz. $4.50@5.00
Aiken's Imitation .....₱ doz. $3.00@3.10
Atkin's Criterion.....₱ doz. $8.00
Atkin's Adjustable.....₱ doz. $8.00
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Spring Hammer.....30&5%
Disston's Star and Mona ch.....35%
Hammer, Bemis & Call Co.'s new Pat. 45%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00.40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18.....60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron..... ....doz. $1 00@1 25
Wood.....doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13 00*	*15.00*	*17 00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70¢&5@70¢10%
" Nickel..60¢&5@60¢10%
Fair qual, Jap...80¢10@80¢10¢10%
" Nickel.....75¢&5@75¢10%
Tailors' Shears.....40@40¢10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40@40&3%
National Cutlery Co., Nickel.....40&10%
National Cutlery Co., En. Hdls....70&10%
Seymour's, Jap.....70@70&5%
Seymour's Nickel.....60@60&5%
Seymour's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....15%

Tinners' Snips—

Forged Handles, Steel Blades..20¢10% Malleable Handles, Laid with Steel, 40%
Forged Handles, Steel Blades, Berlin, 40¢10%
Niagara Snips.....40%
Seymour's.....40@40&5

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company's Pruning Shears all grades.....50&5%
Orange Shears.....50&10%
Grape.....50&10%
Tree Pruners.....75%
P., S. & W. Co.....33⅓&33⅓&10%
Seymour's.....60&10&10@70&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller.....60&10@40&10&5%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7%
Reading.....70&10@75%
R. & E.....45&10%
Wrightsville, Hatfield Patter.....80%

Sliding Shutter—

Reading list.....70&10@75%
R. & E.....60@60&10%
Sargent's list.....50&5@50&10&5%

Shells—

Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Club, Rival, Climax, 10 and 12 gaug .. 65&5%
Paper Shells, Empty:
Club, Rival, Climax, 14, 16 and 20 gauge ($7.50 list).....20&10&5%
Club, Rival, Climax, 10 and 12 gauge .. 33⅓&5%
Acme, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge..... 33⅓&10&5%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%
Primrose Club, Bunn Rival, Yellow Rival, New Climax, 10, 12, 16 and 20 gauge.....20%
High Base, Nitro, Repeater, Defiance, 10, 12, 16 and 20 gauge.....15%

Shells, Loaded—

Loaded with Black Powder..... 40¢5%
Loaded with Nitro Powder..... 40¢10¢10¢5%

Shoes, Horse, Mule, &c.—

Factory Shipments:
Horse and Mule, per keg...$3.50@3.60
Burden's, all sizes.....$3.50
Bryden, Phoenix, Perkins, &c $3.60
Diamond State, Shoemberger, Crescent, &c. $3.60..... ...5%

Shot—

Drop, up to B, 25-lb. bag...$1.35@1.45
Drop, up to B, 5-lb. bag ..... .30
Drop, B and larger, 25-lb. bag.... $1.60@1.70
Drop, B and larger, 5-lb bag. .35
Buck, 25 lb. bag..... .....$1.60@1.70
Buck, 5-lb. bag..... 35
Chilled, 25-lb. bag.....$1.60@1.70
Dust Shot, 25 lb. bag..... 1.90
Dust Shot, 5-lb. bag..... ... .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1,	*B3.*
	1st Grade.	*2d Grade.*
Plain Back....	*$10.50*	*$9 60*
Strap Back....	*9.90*	*9 00*
Cleveland Pat'n	*10.20*	*9 30*

	C3,	*D4.*
	3d Grade.	*4th Grade.*
Plain Back....	*$8.70*	*$8.10*
Strap Back....	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 50c doz.
Black deduct 30c doz.
Note.—The above are the regular combination prices to small retailers.

Shovels and Tongs—

Brass Head .....60&5@60&10%
Iron Head .....60&5@60&10%

Sieves and Sifters—

Hunter's Imitation gro. $11.00@12.00

Buffalo Metallic Blued, S. S. & Co., ₱ gr.:
14&16 16&18 18&20
$12.90 $13.80 $15.00
Eclipse.....₱ gr. $10.00
Electric Light.....₱ gr. $12.00
Hunter's Genuine.....₱ gr. $12.50
Shaker (Barler's Pat.) Flour Sifters.
₱ doz., $2.00.....35%

Sieves, Wooden Rim—

Mesh 18, Nested, doz.....$0.75@0.80
Mesh 20, Nested, doz.....85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Low list.....65@65&5%

NOTE.—*The low list is now generally used, but some jobbers use high list.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted 45%
L. & G.....50%

Skeins, Wagon—

Cast Iron.....70@70&10%
Malleable Iron.....40&10@50%
Steel.....35@35&5%
I. I. & B. Co. Steel.....35%

Slates—

"D" Slates.....50&10@50&10&10%
Unexcelled Noiseless Slates.....
60&6 tens@60&6 tens&5%
Wire Bound.....40&10@50%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....40@40&10%

Covert Mfg. Co.:
Derby.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%

Covert's Saddlery Works:
Banner.....60&10%
Crown.....60&10%
Triumph.....60&10%

W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
National.....50&5%
Clipper.....50&5%
Champion.....40%
Victor.....60&5%

Oneida Community:
Sol d Steel.....65@65&10%
Solid Swivel.....5&1 @45&10&10%
Sargent's Patent Guarded.....
66⅔@66⅔&10%

Snaths—

Scythe.....45&5%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware.....50&10@60&10%
Wm. Rogers M'g. Co.....50&10%

Miscellaneous—

German Silver.....60&10%

Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55@55&10%
Victor (Coil).....60&10@60&10&5%

Carriage, Wagon, &c.

1¼ *in. and wider...Blk. Hf Brt, Brt, Tested and Temp* 5⅛ 5¾ 6c *lb*
Oil Tested and Tempered..... 6⅛ 6¾ 7c *lb*
Cliff's Bolster Springs.....33%
Cliff's Seat Springs.....₱ pair 55¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... { *List May 1, '95...*
Steel and Iron... { 70@70&5@.. %
Rosewood Hdl. Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels.
40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter...50&10%

Squeezers—

Lemon—

Wood, Common, gro.. No. 0, $5.00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined:
Cheap.....*doz. $2.00@2.75*
Good Grade.....*doz. $3.00@3.50*
Tinned Iron.....*doz. $0.80@1.25*
Iron, Porcelain Lined doz. $2.25@3.50
Jennings' Star.....₱ doz. $1.85@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind.....*lb. 9@10c*
Electricians', Association list,.75&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting.....80&10%
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%

Steelyards.....25@25&10%

Stocks and Dies—

Blacksmiths'.....40%

Gardner.....50%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ lb...8¢
Sand Stone.....5¢ } 33⅓&
Turkey Oil Stone, Extra, 5 to 8 in.....80¢ } 33⅓&10%
Turkey Slips.....$1.50

Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 5 to 5½ in. $2.85
Arkansas Stone, No. 1, 5½ to 8 in. $3.50
} 33⅓@33⅓&10%

Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent.....25&5%
Taplin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal, case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points...doz. 55@65c
Cast Steel, Polished.....*doz. $2.25*
Socket.....*doz. $1.75*

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks, Brads, &c.—

List Jan. 15, '99.

Carpet Tacks:
American Blued.....90@90&10%
American Tinned.....90@90&10%
American Cut Tacks.....
85&10@85&10&10%
Swedes Iron Tacks.....90@90&10%
Swedes Upholsterers' Tacks.....
90&20@90&25%
Gimp Tacks.....90&20@90&25%
Lace Tacks.....90&20@90&25%
Trimmers' Tacks.....80@90&10%
Looking Glass Tacks.....70@70&10%
Bill Posters' and Railroad Tack.....
90&20@90&25%
Hungarian Nails.....80&5@80&15%
Common and Patent Brads.....70&5%
Trunk and Clout Nails.....
75&5@75&10&5%

NOTE.—*The above prices are for straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Point Tacks.....90&5@90&10%
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.20
Emerald, S. S. & Co.....60-gal., $4.00
Queen City S. S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

Tapes, Measuring—

American Asses' Skin..40&10@50&10%
Patent Leather.....50&5@30&10%
Steel.....40@40&5%
Chesterman's.....25@25&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30&5%

Thermometers—

Tin Case.....80@80&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White.....20@20&5%

Saw—

Atkins' new list.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....70&10@75&5%
Newhouse.....45@50%
Hawley & Norton.....65&5@70%
Victor (Oneida Pattern).....75@75&10%
Star (Blake Pattern).....65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.9@10c
Mouse, Round or Square Wire.....
doz. $0.85@1.00

Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz. $12.00; case of 24 $10.50
No. 3, Rat, ₱ doz. $5.50; case of 50 $5.00
No. 3¼, Rat, ₱ doz. $4.50; case of 72 $4.00
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25

Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00.....50%
Out o' Sight, Mouse, No. 1, ₱ doz. 60¢; Rat, No. 2, $1.25; Mole, $6.00; Gopher, $1.50; Stop Thief, No. 1, $1.25; No. 2, $1.50.

Fly—

Balloon, Globe or Acme.....
doz. $1.25; gro. $14.50@15.00
Harper, Champion or Paragon.....
doz. $1.50: gro. $17.00

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40%
Douglas' ₱ doz. $9.00.....20%
Stearns'.....25%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels.....
gro. $7.00
Peace's Plastering.....30%
Rose Brick and Plastering.....25&5%
Woodrough & McFarlin, Pl'st'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5.50*	*6.00*

Galvanized S. S. & Co., with Wringer Attachment, ₱ doz., No. 10, $7.25
No. 20, $7.75; No. 30.....$8.25

Twine—

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls	*22c*	*26c*
No. 12, ¼ and ½-lb Balls	*19c*	*22c*
No. 18, ¼ and ½-lb. Balls	*16c*	*19c*
No. 24, ¼ and ½-lb. Balls	*16c*	*19c*
No 36, ¼ and ½-lb. Balls	*15c*	*18c*

Chalk Line, Cotton, ½-lb. Balls.....
18@20c
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....7@8c
Cotton Wrapping, 5 Balls to lb.....
9@16c
American 2-Ply Hemp, ¼ and ¼-lb. Balls.....10@12c
American 3-Ply Hemp, 1-lb. Balls..
10@12c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....9½c
India 3-Ply Hemp, 1-lb. Balls...9½c
India 3-Ply Hemp, 1½-lb. Balls....
8½@9c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls.7¼c
Mason Line, Linen, ½-lb. Balls...45c
No. 264 Mattress, ¼ and ½-lb. Balls.35c
Wool.....6c

Vises—

Solid Box.....50@....%
Bonney's Saw Vises.....40&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands'.....40@40&10%
Lewis Tool Co.....20@30%
Massey's Perfect.....15@20%
Massey's Clincher.....30@40%
Merrill's.....20%
Miller's Falls.....low list 10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....66⅔@66⅔&10%
Simpson's Adjustable.....40%
Stephens'.....25@50%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $ 6 .50&10%
Diston's D 8 Clamp and Guide, ₱ doz $30.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30&7½%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60%

Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up.....60c	Shot.
B. E., 9 and 10.....70c	
B. E., 8.....80c	
B. E., 7.....80c	
P. E., 11 up.....$1.00	
P. E., 9 and 10.....1.25	
P. E., 8.....1.50	
P. E., 7.....1.50	
Ely's B. E., 11 and larger..$1.70@1.75	
Ely's P. E., 12 to 20.....$3.00@3.25	

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60@60&7½%
Unground.....65@65&10%
White Enameled Ware:
Maslin Kettles....75&10@75&10&5%
Boilers and Saucepans...55@55&5%
Tinned Boilers and Saucepans.....
55@55&5%

See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99, 40%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality, Agate Nickel Steel..55%
Second Quality, Granite.....
70&10@70&10&10%

Iron Clad:
Peppered Ware, high list.....70%
Princess Ware, special list.....33⅓%
Mottled Ware, big list.....75%
Never Break Enameled....50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*40c*	*45c*	*50c*	*60c*

Steel Hollow Ware.

Avery Spiders & Griddles.....65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles.....
65@65&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled.....50&5%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame..$3.00
fted Star, laundry size, stationary protector.....$4.25

Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.65
Wilson, family size, bent frame...$2.75

Single Zinc Surface:
Naiad protector, family size, open back perforated.....$2.40
Saginaw Globe, protector, family size, ventilated back.....$2.35
Wilson, bent frame, family size, ventilated back.....$2.25

Washers—

Leather, Axle—

Solid.....80&10&10@85%
Patent.....85@85&5%
Coil: ¾ 1 1½ 1¾ Inch.
12c 13c 14c 16c per 100

Iron or Steel—

Size bolt ... 5-16 ⅜ ½ ⅝ ¾
Washers....$6.20 5.30 4.00 3.30 3.60
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.
NOTE—*Jobbers' prices generally lower than manufacturers'.*

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Weaners—
Tyler's New Halter—No. 1 ₱ doz. $3.45; No. 2, $3.70; No 3, $4.00; No 4, $4 30
Tyler'sSafety—Nos. 1 and 2, ₱ doz. $1.70; No. 3, $2.00; No. 4, $2 30.

Wedges—
Oil Finish.....*lb.* 3¼@4c
Axe Finish.....*lb.* 4@4¼c

Weights, Sash
Carloads at factory.....$18.00@20.00
Less than carloads at factory.....$20.00@22.00
Note—Some Foundries are naming higher prices.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1 75@2.00; 10-in., $2.25@2.60; 12-in., $2.75@3.25; 14-in., $4.00@4.50

Wire and Wire Goods—
Market: Nos. 6 to 16:
Br. & Ann.....70&5@72½%
Cop'd.....65&5@67½%
Galv.....65&5@67½%
Tin'd, Tin'd list.....72½&5@75%
Stone, Br. and Ann'd:
Nos. 19 to 26.....77½@77½&2½%
Nos. 27 to 36.....77½&5@77½&7½%
Annealed Wire on Spools.....60&10@80&10&5%
Brass, list Feb. 26, '96.....15%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
Iron and Brass, list July 1, 1899....80&10@80&10&10%

Wire Cloth and Netting—
Galvanized Wire Netting.....80@80&5%
Painted Screen Cloth per 100 ft.....$1 40@....

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—
Agricultural.....75&5@75&10&....%
Baxter's S.....70%
Coes' Genuine.....44½&10&5&5&3%
Coes' "Mechanics".33⅓&10&10&5&5&3%
Acme.....60&10%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....60&10&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....40%
Boardman's.....33⅓%
Bull Dog, W. & B.....60&10&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70%
Solid Handles, P. S & W.....60&10&10%
Stevenson.....60&10&10%
Stillson's.....55%

Wrought Goods—
Staples, Hooks, &c., list March 17, '92.....80&20@85%

Yokes, Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....*lb* 7¼c@8c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. .. 7½@ 8¼
Lead, American White, in Oil:
Lots of 500 ℔ or over.. .. @ 6
Lots less than 500 ℔.. .. @ 6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price.. .. @ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.. .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1½
Lead White, Dry in bbls.. .. @ 5½
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 3% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.. ₱ ℔ 4½@ 5
Zinc, Paris, Red Seal.. .. @ 8½
Zinc, Paris, Green Seal.. .. @ 9½
Zinc, Antwerp Red Seal.. .. @ 7½
Zinc, Antwerp, Green Seal.. .. @ 8½
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over.. .. @11¼
lots less than 1 ton.. @12½
Zinc, V.M. in Poppy Oil, Red Seal, lots of 1 ton and over.. .. @10½
lots of less than 1 ton.. .. @11½
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.

Black, Carbon.. ₱ ℔ 6 @10
Black, Drop, Amer.. 3 @ 5
Black, Drop, Eng.. 5 @10
Black, Ivory.. 9 @20
Blue, Celestial.. ₱ ℔ 5½@ 8
Blue, Chinese.. 33 @40
Blue, Prussian.. 30 @35
Blue, Ultramarine.. 7 @35
Brown, Spanish.. ½@ 1
Brown, Vandyke, Amer.. 1½@ 2½
Brown, Vandyke, Foreign.. 2½@ 5½
Carmine, No. 40, in bulk.. $2.20@2.25
Carmine, No. 40, in ℔ bottles. 2.40@ ..
Carmine, No. 40, in ounce bot. 2.40@3.50
Green, Chrome, ordinary.. 5 @ 6
Green, Chrome, pure.. 19 @25
Lead, Red, bbls. and ½ bbls.. .. @ 6
Lead, Red, kegs.. .. @ 6½
Litharge, bbls. and ½ bbls.. .. @ 6
Litharge, kegs.. .. @ 6½
Ocher, French Washed.. 1½@ 2½
Ocher, German Washed.. 4½@ 5
Ocher, American.. ₱ ton $10.00@15.00
Orange Mineral, English.. ₱ ℔ 9½@10½
Orange Mineral, French.. .. @11½
Orange Mineral, German.. 10 @10½
Orange Mineral, American.. 7½@ 8
Red, Indian, English.. 4½@ 8½
Red, Indian, American.. 3 @ 3½
Red, Turkey, English.. 7½@10
Red, Tuscan, English.. 7 @10
Red, Venetian, Amer.. ₱ 100 ℔ 80 @1.10
Red Venetian, English. ₱ ℔.. 1½@ 2
Sienna, Italian, Burnt and Powdered.. ₱ ℔ 2½@ 5
Sienna, Ital., Raw, Powd.. 2½@ 5
Sienna, American, Raw.. 1½@ 1½
Sienna, American, Burnt and Powdered.. ₱ ℔ 1½@ 1½
Talc, French.. ₱ 100 ℔ $1.25 @1.50
Talc, American.. .90 @1.10
Terra Alba, French, ₱ 100 ℔.. 80 @1.00
Terra Alba, English.. 85 @1.00
Terra Alba, American No. 1.. 65 @70
Terra Alba, American No. 2.. 45 @50
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.. 1½@ 1½
Umber, Raw, Amer.. 1½@ 1½
Yellow, Chrome.. 10 @25
Vermilion, American Lead.. 10 @20
Vermilion, Quicksilver, bbls or kegs.. .. @67
Vermilion, Quicksilver, bags.. .. @68
Vermilion, Quicks'r, sm'r pkgs.. .. @69
Vermilion, English, Import.. 69 @70
Vermilion, Artificial.. 5 @20
Vermilion Chinese.. .. 80 @90

Colors in Oil.

Black, Lampblack, Best.. .. 10 @14
Black, Lampblack, Common.. 10 @11
Blue, Chinese.. 35 @40
Blue, Prussian.. 32 @35
Blue, Ultramarine.. 12 @16
Brown, Vandyke.. 8 @13
Green, Chrome.. 8 @14
Green, Paris.. @24
Sienna, Raw.. 10 @13
Sienna, Burnt.. 8 @13
Umber, Raw.. 8 @12
Umber, Burnt.. 8 @13

Miscellaneous.

Barytes, Foreign, ₱ ton.. $18.00@20.00
Barytes, Amer. floated.. 19.00@20.00
Barytes, Crude.. 9.00@10.00
Chalk, in bulk.. ₱ ton 2.15@ 2.25
Chalk, in bbls.. ₱ 100 ℔ 35@
China Clay, English.. ₱ ton 15.00@17.00
Cobalt, Oxide.. ₱ 100 ℔ 2.00@ 2.10
Whiting, Common. ₱ 100 ℔ .42½@ .50
Whiting, Gliders.. .47@ .56
Whiting, extra Gliders'.. .57@ .64

Putty.

In barrels and ½ bbls.. .. @1 7-10
In tin cans.. .. @ 3½
In bladders.. .. @2.30

Spirits Turpentine.

In Southern bbls.. .. @51
In machine bbls.. .. @51½

Glue.

Low Grade.. ₱ ℔ 13 @15
Cabinet.. 13 @16
Medium White.. 14 @16
Extra White.. 16 @25
French.. 12 @25
Irish.. 13 @15

Animal, Fish and Vegetable Oils.

Linseed, City, raw.. ₱ gal. 44 @45
Linseed, City, boiled.. 46 @47
Linseed, State and West'n, raw 44 @45
Linseed, raw Calcutta seed.. .. @65
Lard, Prime.. .41 @46
Lard, Extra No. 1.. .38 @39
Lard, No. 1.. .34 @36
Cotton-seed, Crude.. 24 @24½
Cotton-seed, Summer Yellow, prime.. 23½@29
Cotton-seed Summer Yellow, off grades.. .. @24
Sperm, Crude.. .. @ ..
Sperm, Natural Spring.. .. @ ..
Sperm, Bleached Spring.. .. @ ..
Sperm, Natural Winter.. 53 @54
Sperm, Bleached Winter.. 58 @59
Whale, Crude.. .. @ ..
Whale, Natural Winter.. .. @43
Whale, Bleached Winter.. .. @45
Whale, Extra Bleached Win.. .. @48
Menhaden, Crude, Sound.. 25 @27
Menhaden, Light Pressed.. 28 @29
Menhaden, Bleached Winter.. .. @32
Menhaden, Extra Bleached.. 34 @35
Tallow, Western, prime.. 48 @50
Cocoanut, Ceylon.. 6¼@ 6½
Cocoanut, Cochin.. 7¼@ 7⅝
Cod, Domestic.. 34 @36
Cod, Newfoundland.. 34 @40
Red Elaine.. 29 @31
Red Saponified.. ₱ ℔ 4½@ 5
Bank.. ₱ gal. .. @27
Straits.. .. @28
Olive, Italian, bbls.. 53 @60
Neatsfoot, prime.. 45 @50
Palm, prime, Lagos.. ₱ ℔ 5½@ 6

Mineral Oils.

Black, 29 gravity, 25@30 cold test.. ₱ gal. 10½@11
Black, 29 gravity, 15 cold test. 11½@12
Black, summer.. 10 @10½
Cylinder, light filtered.. 14½@17
Cylinder, dark filtered.. 12½@17½
Paraffine, 903-907 gravity.. 12 @12½
Paraffine, 903 gravity.. 11 @11½
Paraffine, 883 gravity.. 9½@10
Paraffine, red, No. 1.. 12 @12½
In small lots ½¢ advance.

THE IRON AGE.

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CURRENT METAL PRICES.

NOVEMBER 22, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb	
1 to 1⅞ in. round and square	₩ lb 2.50@2.60¢
1¼ to 4 in. x ⅜ to 1 in.	
Refined Iron:	
1 to 1⅞ in. round and square	₩ lb 2.60@2.70¢
1¼ to 4 in. x ⅜ to 1 in.	
1¼ to 4 in. x ¼ to 5-16	₩ lb 2.80@2.90¢
Rods—¾ and 11-16 round and square	₩ lb 2.80@2.90¢
Angles:	Cts ₩ lb
3 in x ¼ in. and larger	3.25¢
3 to 3½ in. x 3-16 in.	3.25¢
1¼ to 3 in. x ¼ in.	3.40¢
1¼ to 2¾ in. x 3-16 in and thicker	3.80¢
1 to 1¼ in x 3 16 in.	3.40¢
1 to 1¼ x ⅛ in.	3.50¢
⅝ x ⅛ in.	3.60¢
⅝ x ¼ in.	3.65¢
⅝ x ⅛ in.	4.50¢
½ x 3-32 in.	5.00¢
Tees:	
1 in.	3.70¢
1¼ to 2¾ in.	3.60¢
3 in. and larger	3.40¢
Beams	4.00¢
Channels	4.00¢
Bands—1½ to 6 x 3-16 to No. 8	₩ lb 3.10¢
"Burden's Best" Iron, base price	₩ lb 3.60¢
Burden's "H. B. & S. Iron, base price	₩ lb 3.40¢
"Ulster"	₩ lb 3.40¢
Norway Bars	4 @4½¢
Norway Shapes	4½@5 ¢

Merchant Steel from Store—

	per lb
Open Hearth and Bessemer Machinery	3.00 to 3.10¢
Toe Calk, Tire and Sleigh Shoe	3.75@4.00¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	6 ¢

Soft Steel Sheets—

¼ inch	3.30¢	No. 14	3.40¢
8-16 inch	3.40¢	No. 16	3.50¢
No. 8	3.30¢	No. 18	3.55¢
No. 10	3.30¢	No. 20	3.60¢
No. 12	3.35¢	No. 22	3.65¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ lb, 3.35	3.35¢
Nos. 17 to 21	₩ lb, 3.40	3.45¢
Nos. 22 to 24	₩ lb, 3.45	3.55¢
Nos. 25 and 26	₩ lb, 3.50	3.60¢
No. 27	₩ lb, 3.55	3.65¢
No. 28	₩ lb, 3.60	3.75¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 10½¢
Patent Planished	₩ lb A, 9¾¢; B, 8¾¢, net.
Patent Planished Sheet Steel	₩ lb 8¾¢

Galvanized.

	B. B.	
Nos. 10 to 16	₩ lb, 12¢	70&5% off.
Nos. 17 to 21	₩ lb, 13¢	
Nos. 22 to 24	₩ lb, 14¢	
Nos. 25 to 26	₩ lb, 15¢	
No. 27	₩ lb, 16¢	
No. 28	₩ lb, 17¢	
No. 29	₩ lb, 19¢	
No. 30	₩ lb, 21¢	

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 14 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 14 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 14 ¢
2d quality	₩ lb 13 ¢
3d quality	₩ lb 11 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 19 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 40 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson Self-Hardening	₩ lb 40 ¢

METALS—

Tin—

	Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs		29½@30¢
Straits, Pigs		28½@29¢
Straits in Bars		29½@30¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$7.50
IX, 14 x 20	9.00
Melyn Grade:	
IC, 14 x 20	7.00
IX, 14 x 20	8.50
Allaway Grade:	
IC, 14 x 20	6.15
IX, 14 x 20	7.25

American Coke Plates—Bessemer—

IC, 14 x 20 108 lb	$5.30@5.40
IX, 14 x 20	6.25@6.30
IXX, 14 x 20	7.50@7.60

American Terne Plates—

IC, 20 x 28	$10.50
IX, 20 x 28	12.50

Tin Boiler Plates, American—

IXX, 14 x 26	112 sheets	$13.00
IXX, 14 x 28	112 sheets	14.00
IXX, 14 x 31	112 sheets	15.50

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	18½¢
Ansonia grade Casting	17½¢

Sheet and Bolt—

February 2, 1899. Prices, in cents per pound. Sheet 30 x 60. Net.

Net wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	36 oz. to 64 oz. 25 to 50 lb.	24 oz. to 30 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	22½	22½	22½	22½	23½	24½	28½	28½	31½
30	96	72	22½	22½	22½	22½	23½	25½	28½	31½	
30	.....	96	22½	22½	22½	22½	24½	26½			
36	72	.....	22½	22½	22½	22½	24½	26½	29½	32½	
36	96	72	22½	22½	22½	22½	24½	28¾	31½		
36	120	96	22½	22½	22½	23½	25½				
36	.....	120	22½	22½	23½	24½					
48	72	.....	22½	22½	23½	24½	26½	29½	32½		
48	96	72	22½	22½	23½	25½	27½	30½			
48	120	96	22½	22½	24½	26½	30½				
48	.....	120	22½	23½	25½	28½					
60	72	.....	22½	23½	23½	25½	28¾	33½			
60	96	72	22½	23½	24½	26½	31½				
60	120	96	22½	23½	25½	28½					
60	.....	120	22½	24½	26½	30½					
72	96	.....	22½	23½	25½	30½					
72	144	96	22½	24½	27½	32½					
72	.....	144	23½	25½	30½						
108	120	.....	23½	25½	31½						
108	.....	120	25½	26½							
wider than 108	144	.....	26½	28½							
	.....	144	27½	30½							

Bolt Copper, ⅜ inch diameter and over, ₩ lb 24½¢

Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.

All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb	26½¢
12 oz. and up to 14 oz. to square foot, ₩ lb	27½¢
10 oz. and up to 12 oz., ₩ lb	29½¢
Lighter than 10 oz., ₩ lb	32½¢

Circles less than 8 in. diameter, 2¢ ₩ lb addit on al.

Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8 Base	9 and 10 ⅛¢		11 and 12 ¼¢ ₩ lb adv.
Nos.	13 ⅛¢	14 ¼¢	15 ⅜¢	16 1½¢ ₩ lb adv.
Nos.	17 1½¢	18 2¢	19 2½¢	20 2¾¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered. Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	9- 9	.....	.....	.....	.....	33	31	30	29	28	27	25	24
12	10	.....	.....	37	35	33	31	30	29	28	27	25	24
13	11	.....	.....	37	35	33	31	30	29	28	27	25	24
14	12	.....	41	37	35	33	31	30	29	28	27	25	24
15	13	.....	42	38	36	33	32	31	30	30	28	26	25
16	14	.....	43	39	37	34	33	32	31	30	29	26	25
17	15	.....	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	51	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	21	23	24	25	27 2¢ ₩ lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896

Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¾ in. up to 2 in.	$0.35
" " ⅝ " ¾ "	.36
" " ½ " ⅝ "	.38
" " ⅜ " ½ "	.41
" " 5-16 " ⅜ "	.48
" " ¼ " 5-16 "	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16 "	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.

Discount from list 5%..... 20@25%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass. Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20, inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39

Common High Brass. Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.

Add 1¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 10%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Glid'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 10%; Copper Wire, NET. List November 16, 96.

Spring Wire, 2¢ ₩ lb advance.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb

Western Spelter	5½@5⅝¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.

600 lb casks	8¢ | Per lb 8¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	5@5¼¢
Bar	5¾¢
Pipe (full lengths), subject to discount 20%	6¾¢
Pipe cut lengths), subject to discount 20%	7¼¢
Tin Lined Pipe, subject to discount 20%	12½¢
Block Tin Pipe, subject to discount 20%	45¢
Sheet (full rolls) subject to discount 20%	7¾¢
Sheet (cut rolls (subject to discount 20%	8¾¢
Old Lead in exchange, 4¢ ₩ lb.	

Solder.

½ & ½, guaranteed	19½@20¢
No. 1	17@17½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 11½¢
Hallett's	₩ lb 10½@ 10¾¢
U. S.	₩ lb 10@ 10½¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:	
Small lots	₩ lb 37¢
100-lb lots	₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:	
Small lots	₩ lb 34¢
100-lb lots	₩ lb 33¢
Aluminum Sheet, B. & S. gauge. 50 lb or more.	

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₩ lb.	₩ lb.	₩ lb
Nos. 13 to 19	$0.42	$0.44	$0.47
No. 20	.44	.46	.49
Nos. 21 to 23	.46	.48	.51
No. 24	.46	.50	.53
No. 25	.47	.51	.54
No. 26	.47	.54	.59
No. 27	.48	.57	.62
No. 28	.48	.57	.64
No. 29	.49	.60	.69
No. 30	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.			
Larger than No. 9	₩ lb 40¢	No. 15	₩ lb 43¢
No. 9 to No. 10	₩ lb 40½¢	No. 17	₩ lb 50¢
No. 11	₩ lb 41 ¢	No. 18	₩ lb 55¢
No 12	₩ lb 41½¢	No. 19	₩ lb 60¢
No. 13	₩ lb 42 ¢	No. 20	₩ lb 65¢
No 14	₩ lb 43½¢	No. 21	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 14¾@15 ¢
Light and Tinned Copper	₩ lb 13½@13¾¢
Heavy Brass	₩ lb 10 ¢
Light Brass	₩ lb 8½@ 9 ¢
Lead	₩ lb 4 @ 4½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 3½¢
No. 1 Pewter	₩ lb 17 ¢
No. 2 Pewter	₩ lb 19 ¢
Tin Plate scrap	₩ ton $5.00
Wrought Scrap Iron	₩ gross ton $16.00
Heavy Cast Scrap	₩ gross ton $15.00
Stove Plate Scrap	₩ gross ton $10.00
Burnt Iron	₩ gross ton $8.00